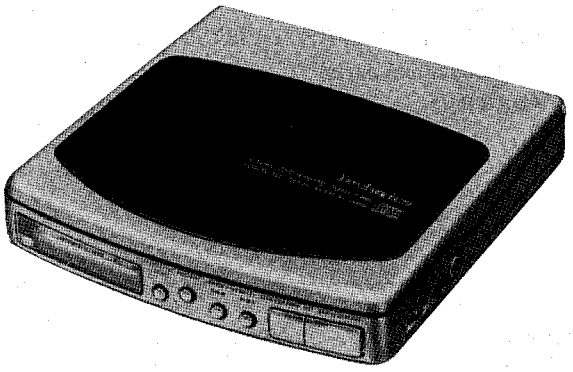
ORDER NO. AD8810280C8

Service Manual

Compact Disc Player

SL-XP6



Color

(K)...Black Type
(S)...Silver Type

Area

Color	Area
(K) (S)	(EX) .....Continental Europe.
(K) (S)	(EK) .....United Kingdom.
(K) (S)	(XL).....Australia.
(K) (S)	(EG).....F.R. Germany.
(K) (S)	(EB).....Belgium.
(K) (S)	(EH).....Holland.
(K) (S)	(EF) .....France.
(K) (S)	(Ei).....Italy.
(K) (S)	(EW) .....Switzerland.
(K) (S)	(XA) .....Asia, Latin America, Middle Near East, Africa and Oceania.

SPECIFICATIONS (* Measured by EIAJ CP-307)

■ Audio

No. of channels:	2 channels (stereo)
Output voltage:	1.0 V (50 kΩ)
Frequency response:	20~20,000 Hz (+0.5 dB, −1 dB)
Dynamic range:	more than 88 dB*
S/N ratio:	more than 88 dB*
Total harmonic distortion:	0.008% (1 kHz, 0 dB)*
Wow and flutter:	below measurable limit
Digital filter:	Quadruple oversampling
Phones output:	max. 15 mW/32Ω (adjustable)

■ Signal Format

Sampling frequency:	44.1 kHz
Correction system:	Technics Super Decoding Algorithm
D-A conversion:	16-bit linear

■ Pickup

Type:	Fine-focus, one beam
Light source:	Semiconductor laser
Wavelength:	780 nm
Lens:	Glass pressed lens

■ General

Power supply:	DC 3 V
Power consumption:	
AC adaptor;	For continental Europe, 1.8 W For Australia, 1.8 W For others, 2 W
Battery;	0.7 W (DC 3 V)
Dimensions (W×H×D):	126×28×128 mm
Weight:	350 g without batteries

Specifications are subject to change without notice.
Weight and dimensions are approximate.

Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

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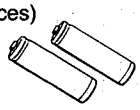
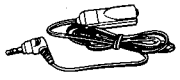
■ ACCESSORIES

Rechargeable batteries (2 pieces)



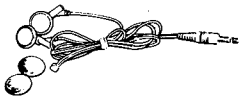
(SH-CDB8)

Wired remote control



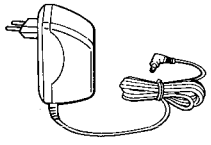
(SPBD139Z)

Stereo earphones



(SJPD5-2)

AC adaptor

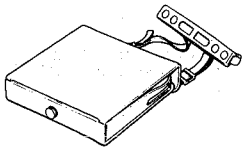


(SH-CDA6U-E [EX, EW])
(SH-CDA6U-EK [EK])
(SH-CDA6U-E5 [EG, EB, EH, EF, Ei])
(SH-CDA6U-XL [XL])
(SH-CDA6U-X [XA, XB])

Stereo connection cable

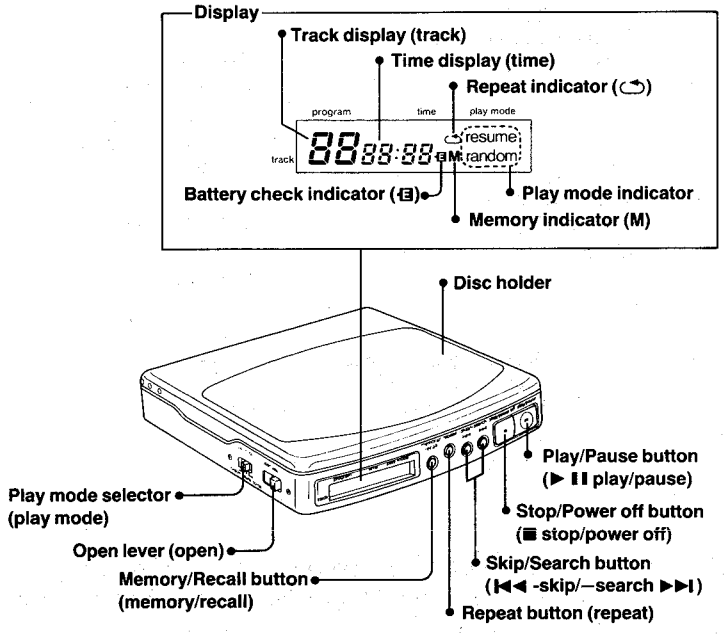
(SPBD140Z)

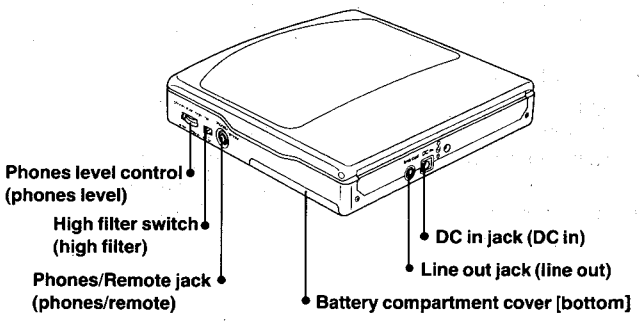
Carrying case



(SPDD20)

■ PANEL CONTROLS




Phones level control (phones level)
High filter switch (high filter)
Phones/Remote jack (phones/remote)
DC in jack (DC in)
Line out jack (line out)
Battery compartment cover [bottom]

■PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780nM
Maximum output radiation power from pick up: 100μW/VDE

Laser radiation from the pick up lens is safety level, but be sure the followings:

1. Do not disassemble the optical pick up unit, since radiation from exposed laserd diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick up lens for a long time.

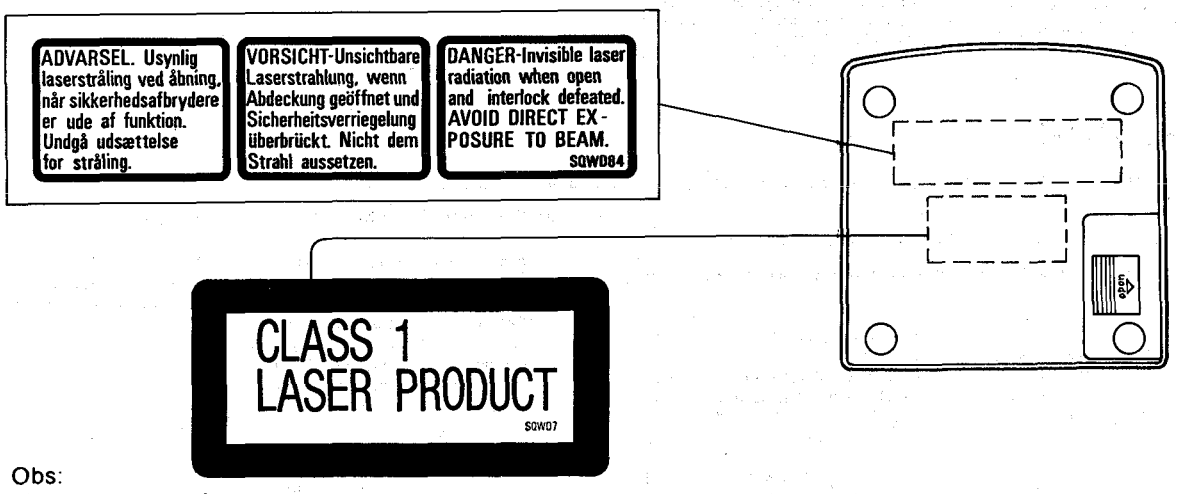
ACHTUNG: Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

Wellenlänge: 780nM
Maximale strahlungsleistung der lasereinheit: 100μW/VDE

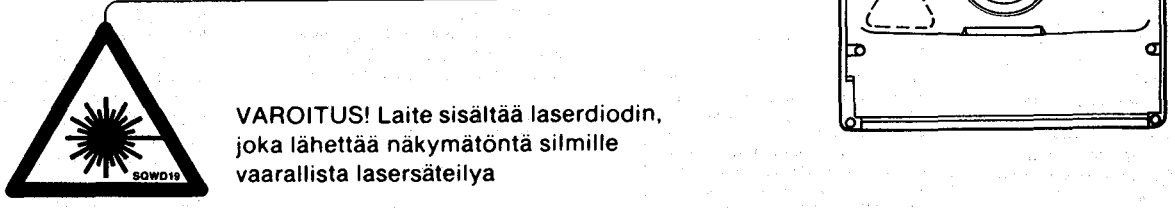
Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährliich ist.
2. Den werksseitig justierten einstellregler der lasereinreit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

ADVARSEL: I dette a apparat anvendes laser.


ADVARSEL. Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.
VORSICHT-Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet und Sicherheitsverriegelung überbrückt. Nicht dem Strahl aussetzen.
DANGER-Invisible laser radiation when open and interlock defeated. AVOID DIRECT EXPOSURE TO BEAM.
SQWD84
CLASS 1
LASER PRODUCT
SQWD7

Obs:
Apparaten innehåller laser
Komponent av höger laserklass
än klass 1.



VAROITUS! Laite sisältää laserdiodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilya

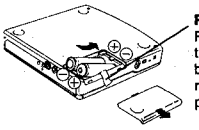
■ POWER SOURCE

This unit may be used with the included rechargeable batteries or two LR6 type alkaline batteries, the included AC adaptor or the optional car adaptor (SH-CDC6, optional).

■ Rechargeable batteries operation

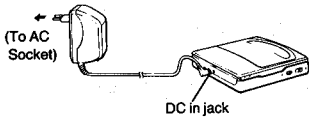
For its initial use after purchasing or after a long time interval (more than three months), make sure to recharge the rechargeable batteries. Normally 3 hours recharging will give approximately 2 hours play (at 25°C).

1. Open the battery compartment cover and insert the rechargeable batteries into the battery compartment, making sure that the proper polarities are maintained.



Ribbon
Place underneath the batteries. The batteries can be removed easily by pulling the Ribbon.

2. Close the cover and connect the AC adaptor as shown in the figure.



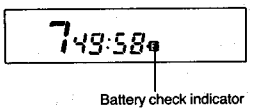
The shapes of the AC adaptor and plug may differ according to the area.

3. Disconnect the AC adaptor in about 3 hours.

•The unit can be turned on with the AC adaptor while the battery is being recharged. In this case, the recharging time will be longer than the specified time.

•Rechargeable battery life
This rechargeable battery can be recharged about 300 times. Over 300 times, its operation time will become shortened. That's time for replacing the rechargeable batteries with new ones (SH-CDB8).

•Battery condition can be checked by the battery check indicator on the display. When the batteries are weak, the battery check indicator begins to flash on and off, and then the unit will automatically shut off.



■ Optional LR6 type battery operation

Two LR6 type alkaline batteries can be inserted into the battery compartment in the same way as the rechargeable batteries.

•Battery condition can be also checked by the battery check indicator. The indicator begins flashing on and off at a half consumption of the battery life.
Use of alkaline batteries will give approximately 3.5 hours play (at 25°C).

Notes:
•Batteries installed with incorrect polarities may leak and damage this unit.
•Do not mix batteries (old and new) or types (Ni-Cd, alkaline and carbon).
•If the set is not used for a long period of time or is used only from an AC power source, remove all the batteries for battery life and to prevent potential damage due to possible battery leakage.

■ AC power operation

Use only the included AC adaptor with this unit.

1. Insert the plug, at the end of the AC adaptor cord, into the DC Input Jack.
2. Plug the AC adaptor into your household AC power outlet.

Note:
To operate on battery power, unplug the AC adaptor from the household AC power outlet and the DC Input Jack on the unit.

■ Car battery operation

Follow the operating instructions of the optional car adaptor.
The rechargeable battery can be recharged with the car adaptor.

CAUTION:
Use only car adaptor, Model: SH-CDC6 manufactured by Matsushita Electric Industrial Co., Ltd.

Notes:
•The batteries supplied with this unit are designed for Technics brand portable audio products only. Use in other products could cause damage or personal injury.
•Use only the included AC adaptor or optional car adaptor when recharging.
•During recharging, the AC adaptor and rechargeable batteries may get warm. This is normal.
•On its initial use after purchasing or its use after a long time interval, 3 hours recharging may not provide normal operation time. But the repeat of recharging will recover the normal operation time.
•Do not recharge longer than the specified time, otherwise the rechargeable battery life may be shortened.
•Avoid recharging or placing the rechargeable battery near sources of heat or humidity. Recharging should be performed at 0°C~40°C (32°F~104°F).
•Do not attempt to recharge LR6/R6 type alkaline or carbon batteries.
•Do not use a rechargeable battery mixed with the other type (carbon or alkaline).
•Do not allow metal objects to touch the terminals. (A hazardous short circuit may result.)
•Do not incinerate the battery or bring it near a fire or open flame.
•If a battery leak should occur and the electrolyte comes into contact with skin or clothes, flush with water immediately.
If the internal parts of the battery become visible because of damage to the battery, discard it immediately.

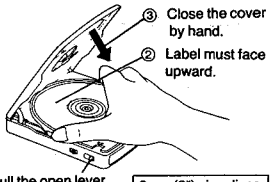
■ OPERATION

The following explanation is for a disc containing 7 tracks having a total playing time of 49 minutes and 58 seconds.

[1] Automatic play (To play a disc from the first track to the end of the disc)

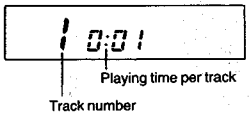
First, set the play mode selector to "normal" position. (The play mode indicator has no display.)

1. Insert a disc.



8 cm (3") size discs can be used without adaptor.

2. Press the play/pause button.
•The unit will be turned on and the disc will be played from the first track.

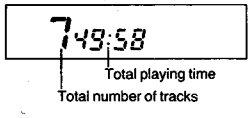


3. Adjust the volume.

First, turn down the level control of the unit or the connected audio system.

•To listen through earphones or headphones, adjust the phones level by the phones level control of the unit.
High filter switch (phones only)
Set the high filter switch to "on", if high-frequency sound range is too strong.
•To listen through an audio system, adjust the output level on the amplifier or receiver.

4. To stop disc play, press the stop/power off button.
•The disc will stop rotating, and the total number of tracks and total playing time will be displayed.



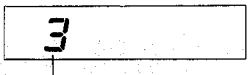
•When all tracks have been played, the disc will automatically stop.

5. Press the stop/power off button again to turn the unit off.
•The unit will be turned off automatically after about 5 minutes in the stop mode.

Notes:
•Always press the stop/power off button before opening the disc compartment to avoid possible damage to disc and/or the disc play mechanism.
•Set the unit to the stop mode (total number of tracks and total playing time are displayed) for Direct access play or Program play. Make sure to press the stop/power off button after the track number is displayed.

[2] Skip play (To start disc play from a specific track)

1. Press the ▶▶| button (skip/search) in the stop mode to specify the desired track.
•Each time you press this button, the pickup will advance by one track. If you go past the desired track, return the pickup using the |◀◀ button.



For example, to play a disc from the track 3, press the ▶▶| button 3 times.

•To cancel, press the stop/power off button.

2. Press the play/pause button.
•Disc play will start from the specified track, and continue to the last track.

■ Skip play during disc play

By pressing the skip/search button (|◀◀ or ▶▶|) during disc play or when disc play is paused, you can easily move the pickup to the beginning of the track being played or a track before or after it.

•Forward skip
Each time the ▶▶| button is pressed, the track number on the display will skip forward and disc play will resume.

For example, to skip from the track 3 to the track 5...

(Press the ▶▶| button twice.)

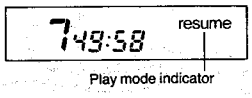
•Backward skip
If the |◀◀ button is pressed once, the disc will be played from the beginning of the track being played. Each time the |◀◀ button is pressed after that within no display of the playing time, the track number on the display will skip backward and disc play will resume.

For example, to skip from the track 5 to the track 3...

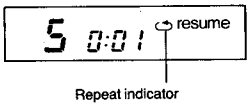
(press the |◀◀ button 3 times.)

3 Resume play (To play a disc from the track last played)

1. Set the play mode selector to "resume" in the stop mode.



2. Press the play/pause button.
3. Press the stop/power off button to stop disc play (for example, while the track 5 is being played).
4. Press the stop/power off button again to turn the unit off.
   - Resume play can be performed without turning the unit off. If this case, the automatic repeat does not function.
5. Press the play/pause button.
   - The disc will be played from the beginning of the track 5.



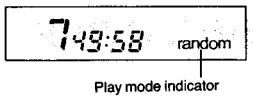
•Automatic Repeat Function
When the unit is turned on the resume mode, the unit will be automatically in the repeat mode.
- To cancel the repeat mode, press the repeat button or press the stop/power off button.

Notes:
- The disc may be played from the next track when disc play has been stopped near the end of the track.
- Changing a disc confuses the resume play operation.
- Resume play cannot be performed when using the disc contained only one program.
- Program memory can not be resumed. If the unit has been turned off during program play, the track being played will resume only.

4 Random play (To play a disc in random order)

The unit's microcomputer selects the sequence of play in random order until all of the tracks on the disc have been played.

1. Set the play mode selector to "random" in the stop mode.



2. Press the play/pause button.
   - The disc will be played in the random order.

- The track number can be changed by pressing the ▶▶| button in the stop mode. In this case, the track number is also changed in random order.
- When all tracks have been played in random order, the disc will automatically stop.

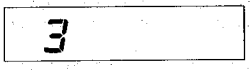
Note:
Program play cannot be performed in the random mode.

5 Program play (to play a disc in a certain order)

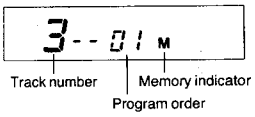
A maximum of 18 selections can be programed. First, set the play mode selector to "normal" position (The play mode indicator has no display).

For example, to play track 3, track 5, track 1 in that order...

1. Press the ▶▶| button 3 times in the stop mode.



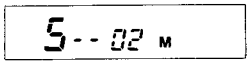
2. Press the memory/recall button.



   - If the memory/recall button is pressed repeatedly, the same track is programed.

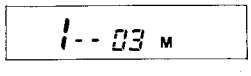
3. Repeat procedure 1 and 2 according to your program selections.
   ① Press the ▶▶| button twice.

   ② Press the memory/recall button.

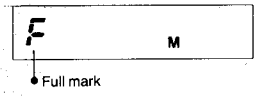


   ③ Press the |◀◀ button 4 times.

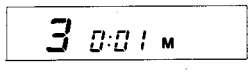
   ④ Press the memory/recall button.



- To clear the program, press the stop/power off button before Program play.
- If the program time is over 18 times, the following display appears.



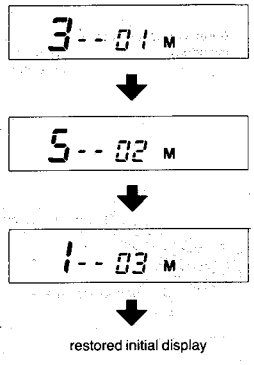
4. Press the play/pause button.
   - The disc will be played in the programed order.



- When all programed tracks have been played, the disc will automatically stop.

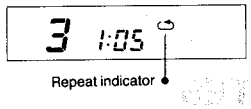
Note:
All program memorized will be cancelled when the stop/power off button is pressed during program play. If the play/pause button is pressed during program play, the program is not cancelled.

•Recall Function
By pressing the memory/recall button once during program play, the program can be easily recalled.



■ Repeat play

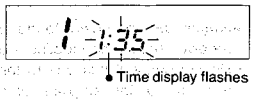
If the repeat button is pressed before or during disc play, the repeat indicator will appear, and the disc will be played repeatedly. Pressing the repeat button again or pressing the stop/power off button will cancel the repeat function.



- During Program play, only the memorized tracks will be played again in the memorized sequence.

■ Pause function

If the play/pause button is pressed while a disc is being played, disc play will stop briefly.



- When this button is pressed once again, disc play will continue from where it stopped.

•Automatic power off function
The unit will be turned off automatically after about 5 minutes in the stop or pause mode for battery life.

■ Search function

If the ▶▶| button (or |◀◀ button) is pressed and held during disc play, sound from the disc can be heard as the pickup moves at high speed in the forward (reverse) direction (the output level at this time is ¼ of the level during normal play). Release the button when the pickup reaches the desired portion of the disc.

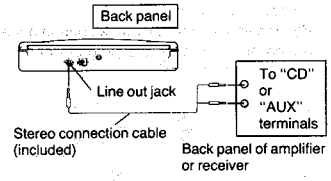
Notes:
- During program play or random play, you can only search the track being played.
- If you release the button immediately, the unit will go into the Skip play.

■ CONNECTIONS

■ Listening through an audio system

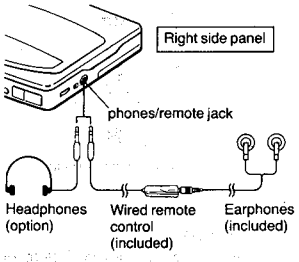
Use the stereo connection cable (included) to connect this unit to an amplifier or a receiver.

- Switch OFF the power to the amplifier or receiver before connecting this unit.
- Do not connect this unit to the PHONO terminals of the amplifier or receiver.



■ Listening through earphones or headphones

Connect the plug of the earphones (included) with the wired remote control (included) or headphones (option) to the phones/remote jack.

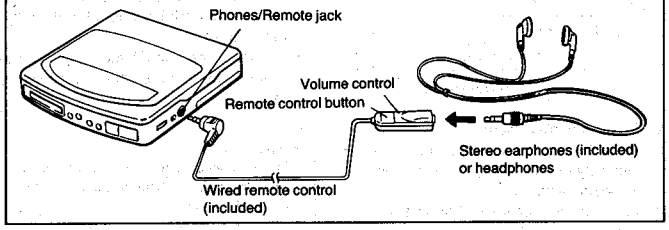


■ WIRED REMOTE CONTROL

The following operations can be performed with the wired remote control, without pressing the operation buttons on the unit.

•play •stop •forward skip •volume control (phones level)

Connection



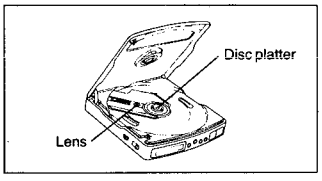
■ Operation

- Pressing the remote control button once makes disc play start.
- Pressing it again makes disc play stop.
- Pressing it twice quickly during disc play makes the pickup move to the beginning of the next track.
- Volume can be controlled within the main level of the unit. Make sure to adjust the phones level control of the unit to 5~7 position.

■ OPERATION NOTES

■ Keep dust out.

Always be sure to close the disc holder to keep dust away from the lens. Also be careful never to touch the lens or disc platter.



■ Open the disc holder carefully.

When opening the disc holder, hold the unit horizontally so that the disc won't fall out.

■ Moisture may form on the lens in the following cases...

- Immediately after a heater has been turned on.
- In a steamy or very humid room.
- When the unit is suddenly moved from a cold environment to a warm one.

If moisture forms inside this unit, it may not operate properly. To correct this problem, wait about one hour for the moisture to evaporate.

■ Be careful of the volume level.

Compared to ordinary analog records, the music recorded on compact discs includes very little noise. If you adjust the volume control on the amplifier by listening to the noise as a reference, as you may have done for ordinary records in the past, an extremely high output will be emitted from the amplifier, which might damage your speakers.

■ Do not place near a tuner or television.

This unit uses high-frequency signals and can cause interference with radio and television reception. Should this occur, relocate this unit away from them. If this does not help, switch off the power to this unit when listening to the radio or watching TV.

■ Keep away from tapes.

The magnet used in this unit might erase the contents of nearby tapes.

■ About the play time display...

You may notice that there is a slight difference (a few seconds) between the time displayed for each tune and the time shown in the notes included with the disc. This is because the displayed time includes the time between tracks.

■ Remove the disc before transporting.

When transporting the unit, make sure to remove the disc from the unit to avoid accidental play start.

■ TROUBLESHOOTING GUIDE

If the unit does not operate properly, check all of the following points, as well as connections and the control positions of all components connected to this unit, before requesting professional servicing. This table does not include checks for mistaken connections or incorrect settings of other components. If the problem is not solved by this table or is not included in the problems listed below, contact your Technics dealer for assistance.

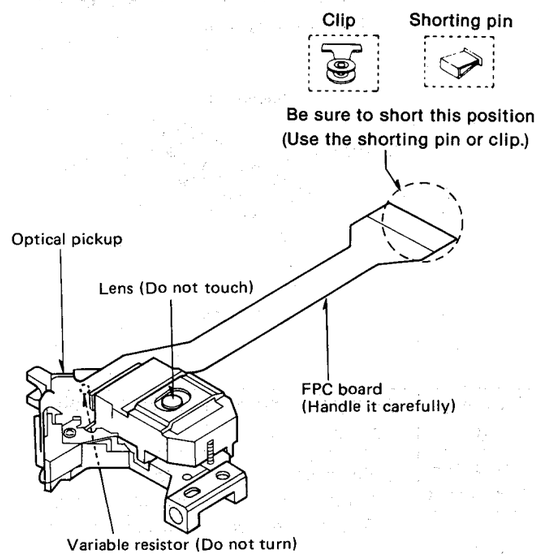
Problem	Causes	Remedy
Disc holder cannot be closed.	•The disc is not properly inserted.	•Take it out and insert it again.
Disc is inserted but number of tracks and playing time are not displayed.	•Disc is inserted upside down. •Disc is dirty. •Disc is scratched. •Disc is seriously warped. •A non-standard disc is inserted. •Dew has formed inside the player.	•Insert disc again properly. •Wipe clean with soft cloth. •Use a new disc. •Use a new disc. •Use only discs with the mark. **•Switch the player ON and wait about 1 hour.**

■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.

• Handling of optical pickup

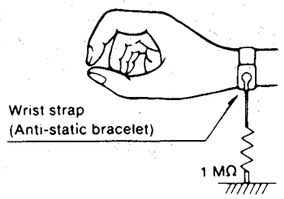
1. Do not subject the optical pickup to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. (FPC board)
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board. (FPC board)
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

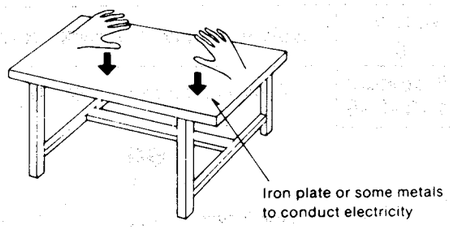


• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.





■ DISASSEMBLY INSTRUCTIONS

Warning: This product uses a laser diodes. Refer to caution statements on page 3.

ACHTUNG:
- Die lasereinheit nicht zerlegen.
- Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

*** This CD player is equipped with FPC boards, so handle them with care during disassembly and reassembly.**

Ref. No. 1	How to remove the bottom cabinet
Procedure 1	1. Remove the 4 screws (❶ ~ ❹). 2. Press the open button to open the disc holder. 3. Remove the bottom cabinet in the direction indicated by the arrow.

* When remounting the bottom cabinet, set both the play mode switch inside the chassis and the knob on the bottom cabinet to the "random" position.

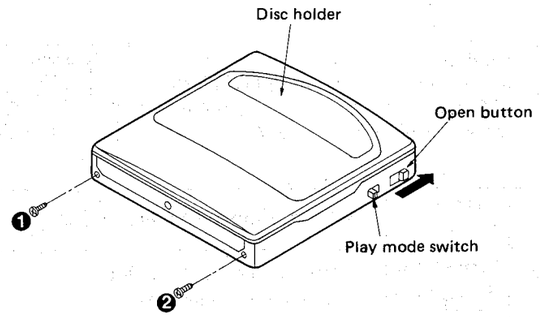


Fig. 1

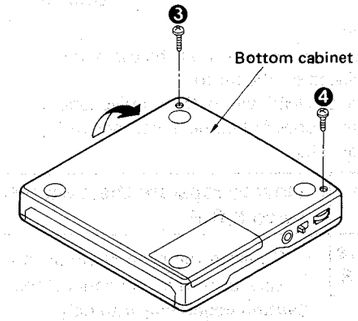
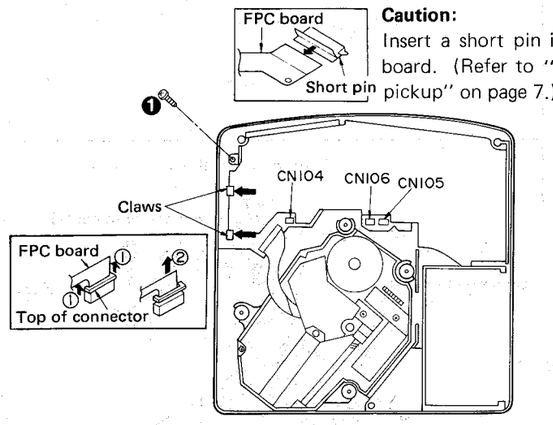


Fig. 2

Ref. No. 2	How to remove the main P.C.B. and servo P.C.B.
Procedure 1→2	1. Disconnect the connectors (CN104, CN105, and CN106). 2. Remove the FPC board. 3. Remove the 1 screw (❶). 4. Press the claws shown in Fig. 3 and remove the printed circuit boards in the direction indicated by arrows Ⓐ and Ⓑ (Fig. 4).



Caution:
Insert a short pin into the optical pickup's FPC board. (Refer to "Handling precautions for optical pickup" on page 7.)

Fig. 3

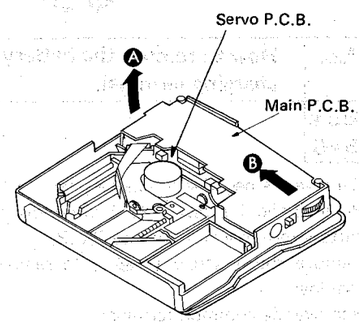


Fig. 4

1. Raise the top of the connector in the direction indicated by arrow ①.
2. Remove the FPC board in the direction indicated by arrow ②.

Ref. No. 3 — How to remove the traverse unit

Procedure 1→3

1. Remove the mounting screw (❶) of the ground lug (Fig. 5).
2. Raise the traverse unit in the direction indicated by the arrow (Fig. 5).
3. Disconnect the connectors (CN104, CN105, and CN106) (Fig. 6).
4. Remove the FPC board (Fig. 6).

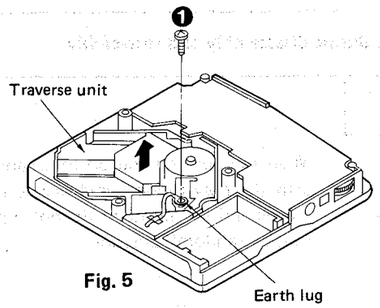
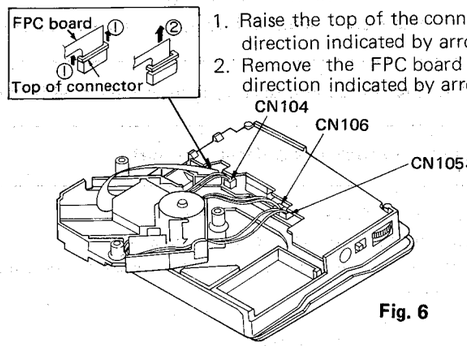


Fig. 5

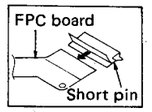


1. Raise the top of the connector in the direction indicated by arrow ①.
2. Remove the FPC board in the direction indicated by arrow ②.

Fig. 6

Caution:
* Tighten the screw so that the earth lug is not placed on the motor.
* Secure the lead wire with adhesive tape so that it does not come in contact with the earth lug.

Caution:
Insert a short pin into the optical pickup's FPC board. (Refer to "Handling precautions for optical pickup" on page 7.)



Ref. No. 4 — How to separate the main P.C.B. and servo P.C.B.

Procedure 1→2→3

- Separate the printed circuit boards, being careful of the two connectors.

Caution concerning assembly:
- Be sure that the two connectors are connected securely.

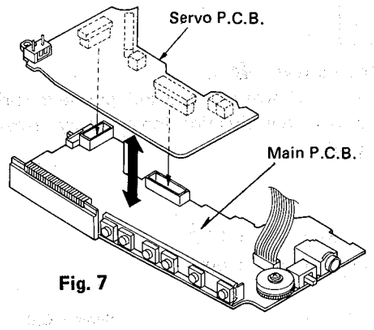


Fig. 7

Ref. No. 5 — How to remove the jack P.C.B.

Procedure 1→3→5

1. Remove the 1 screw (❶).
2. Unsolder the 3 terminals.

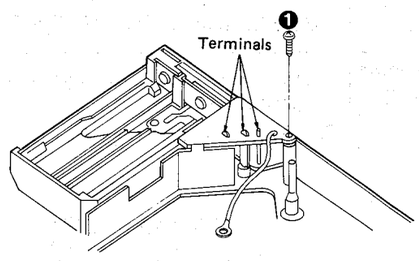


Fig. 8

Ref. No. 6 — How to remove the battery and charging terminal.

Procedure 1→3→5→6

1. Remove the negative (–) battery terminal.
2. Remove the 1 screw (❶) to remove the positive (+) battery terminal and the fuse P.C.B.
3. Remove the 1 screw (❷) to remove the charging terminal.
4. Remove the common terminal.

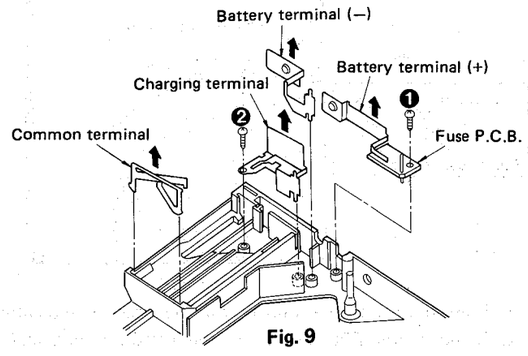


Fig. 9

Ref. No. 7 — How to remove the disc holder

Procedure 1→3→7

1. Use a screwdriver or similar tool to push the support shaft in the direction indicated by the arrow and remove it (Fig. 10).
2. Remove the 2 screws (❶、❷) to remove the stay (Fig. 11).
3. Remove the washer (Fig. 12).
4. Remove the disc holder in the direction indicated by the arrow (Fig. 12).

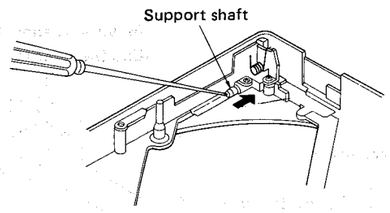


Fig. 10

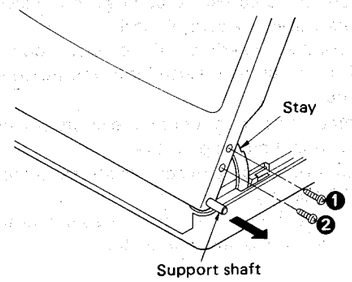
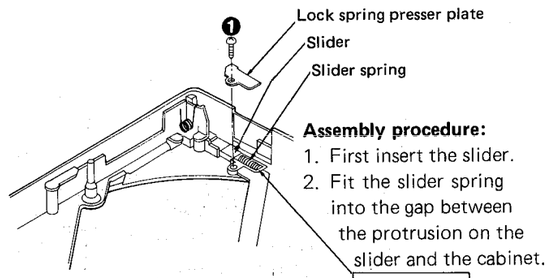


Fig. 11

Ref. No. 8 — How to remove the slider and slider spring

Procedure 1→3→8

1. Remove the 1 screw (❶).
2. Remove the lock spring presser plate.
3. Remove the slider spring and the slider.



Assembly procedure:
1. First insert the slider.
2. Fit the slider spring into the gap between the protrusion on the slider and the cabinet.

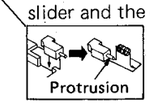


Fig. 13

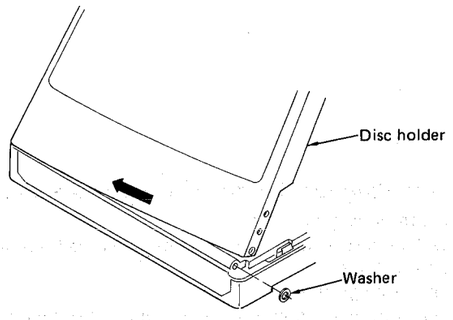


Fig. 12

Ref. No. 9 — How to remove the back fixture

Procedure 1→3→5→9

1. Remove the 2 screws (❶、❷).

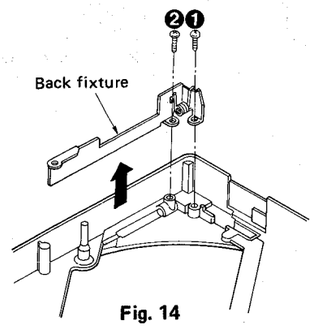


Fig. 14

Ref. No. 10 — How to remove the open and play button ass'y

Procedure 1→10

1. Remove the 2 screws (❶、❷)

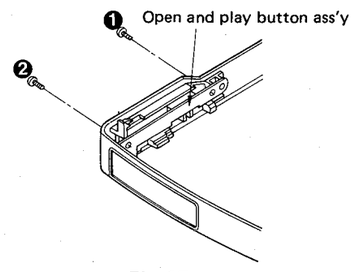


Fig. 15

Ref. No. 11	How to remove the operation button
Procedure 1→10→11	

1. Press the front decorative plate in the direction indicated by the arrow in order to remove it.
2. Undo the claw on the front decorative plate and remove the operation buttons.

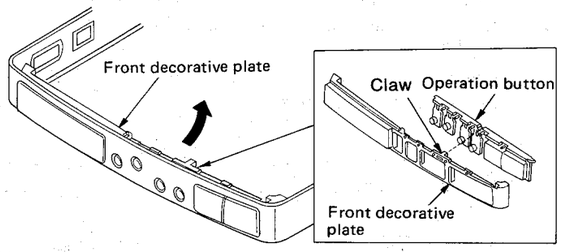


Fig. 16

Ref. No. 12	How to remove the clamper
Procedure 12	

1. Press the area indicated by the arrows in order to remove the decorative plate (Fig. 17).
2. Raise the clamper in the direction indicated by arrow (Ⓐ) and turn it in the direction indicated by arrow (Ⓑ) (Fig. 18).
3. Remove the clamper in the direction indicated by arrow (Ⓒ) (Fig. 18).

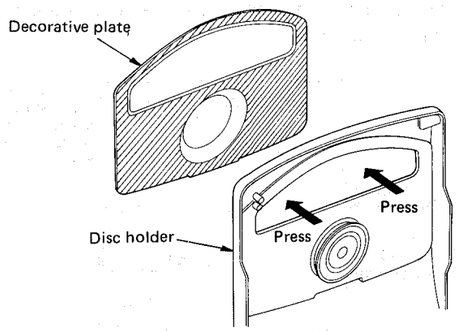


Fig. 17

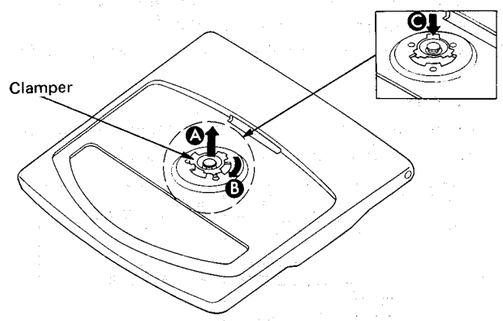


Fig. 18

Ref. No. 13	How to remove the optical pickup
Procedure 1→3→13	

1. Remove the 1 screw (❶). (Fig. 19)
2. Remove the traverse motor in the direction indicated by the arrow (Fig. 19).
3. Remove the optical pickup in the direction indicated by arrow (Ⓐ、Ⓑ). (Fig. 20)

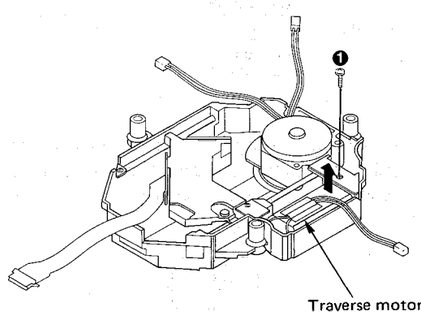


Fig. 19

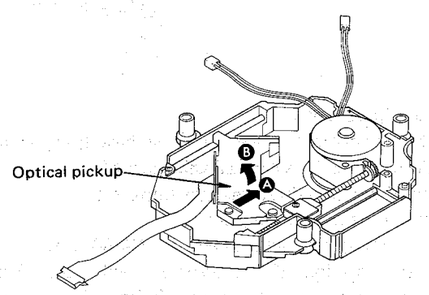


Fig. 20

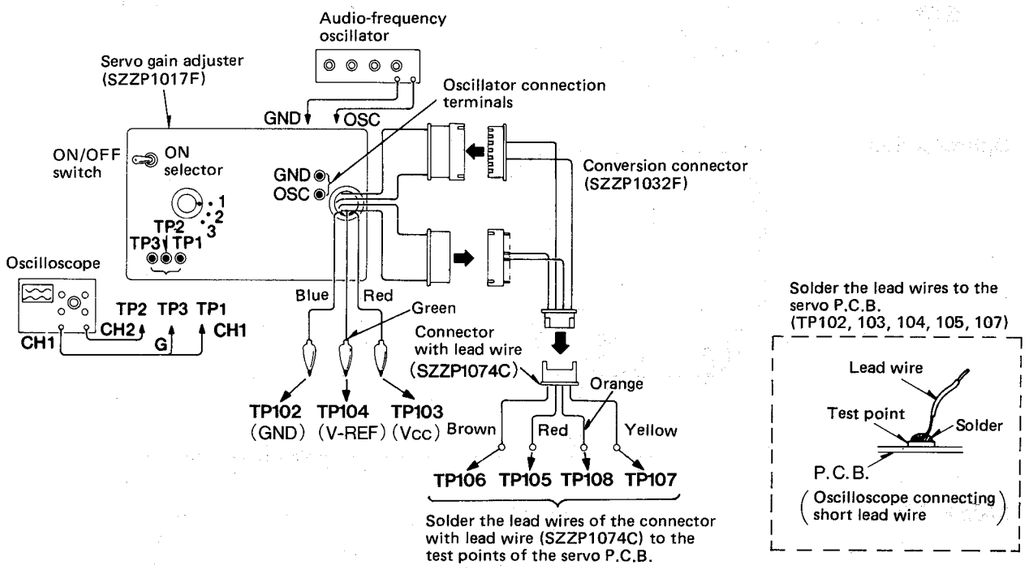
■ MEASUREMENTS AND ADJUSTMENTS

Warning: This product uses a laser diode. Refer to caution statements on page 3.

Measuring Instruments and Special Tools

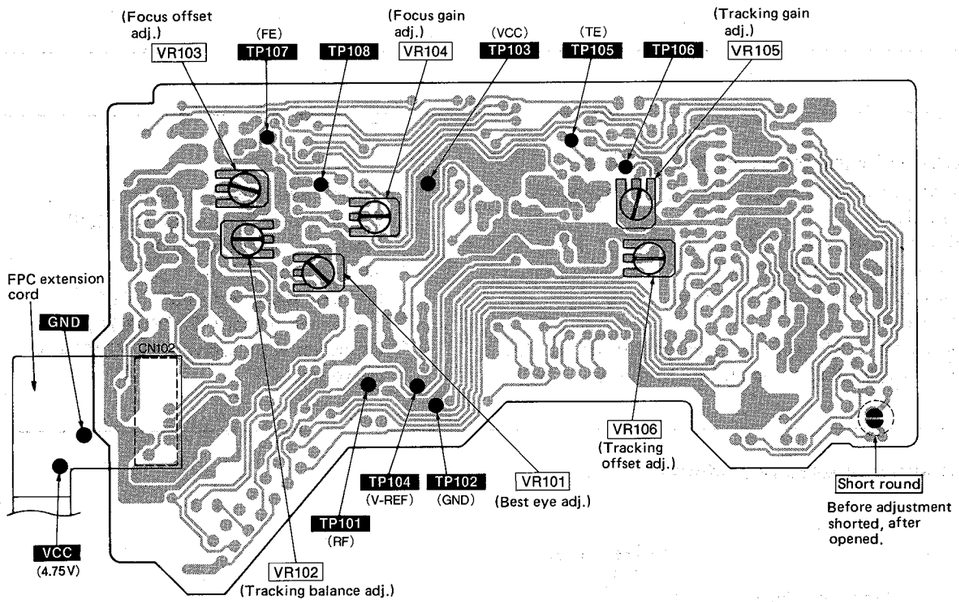
* Servo gain adjuster (SZZP1017F or SZZP1094C)
* Test discs
1. Playability test disc (SZZP1054C or SZZP1014F)
2. Uneven test disc (SZZP1056C)
3. Black band test disc (SZZP1057C)
* Normal disc
* Dual-beam oscilloscope with bandwidth of 30 MHz or better (with EXT. trigger and 1 : 1 probe).
* Audio-frequency (AF) oscillator
* Conversion connector (SZZP1032F)
* Lead wire (for test points)
* Allen wrench (M2.0)
* FPC extension cord (SZZP1096F)
* FPC extension cord (SZZP1097F)
* Connector with lead wire (SZZP1074C)
* DC voltmeter

Preparation for servo gain adjuster

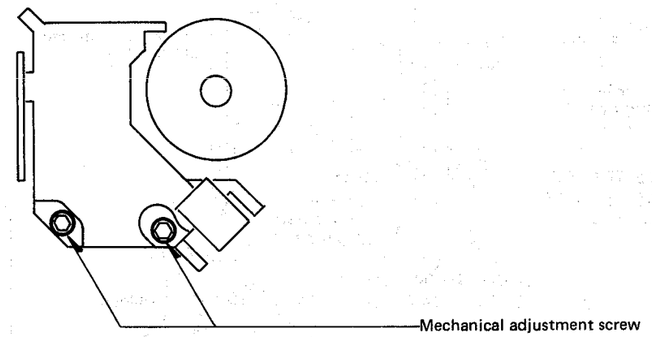


Adjustment points

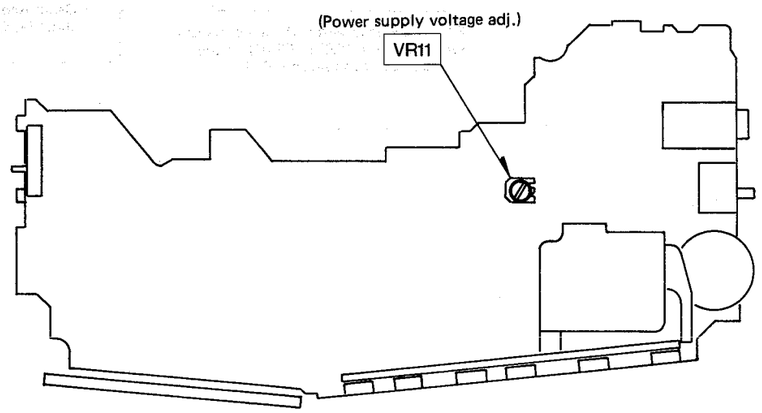
- **Servo P.C.B.**



- **Optical pickup**

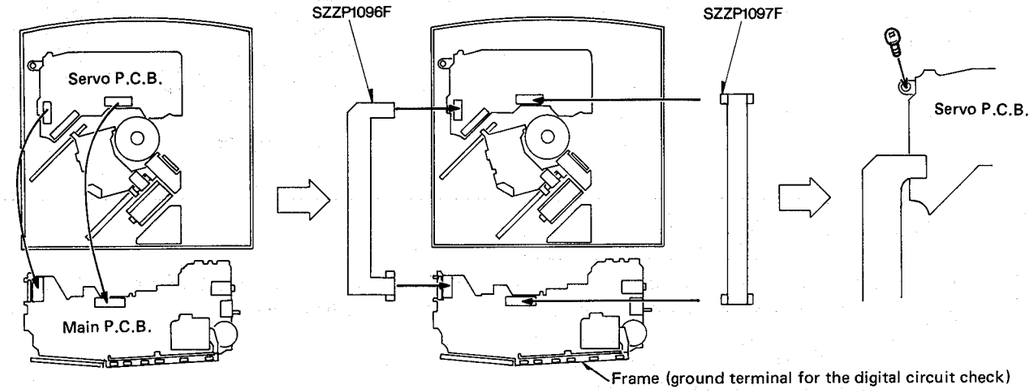


- **Main P.C.B.**



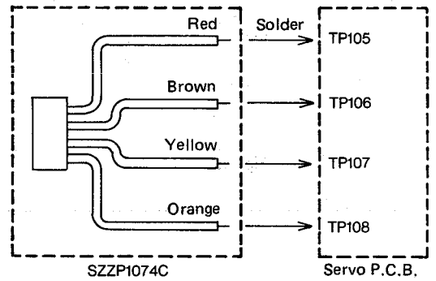
Preparation for adjustments

1. Remove the cabinet and the P.C.B. in accordance with Procedures 1 and 2 of "DISASSEMBLY INSTRUCTIONS".
2. Separate the servo P.C.B. from the main P.C.B. in accordance with Procedure 4.
3. Use the FPC extension cords (SZZP1097F and SZZP1096F) to connect the separate servo P.C.B. and main P.C.B.
4. Secure the servo P.C.B. to the chassis with the screw removed in Procedure 2 of "DISASSEMBLY INSTRUCTIONS".

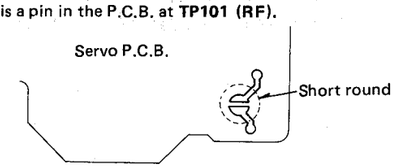


5. Solder the lead wires for the servo gain adjuster (SZZP1074C) and the test lead wires to the various adjustment points on the servo P.C.B.
6. Use solder or a lead wire to short the short round of the servo P.C.B.

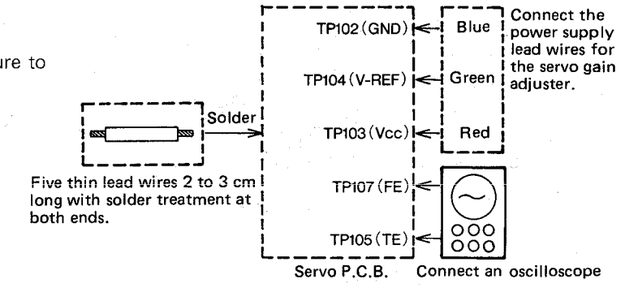
   Caution:
   When the adjustments have been completed, be sure to return the short round to the open condition.

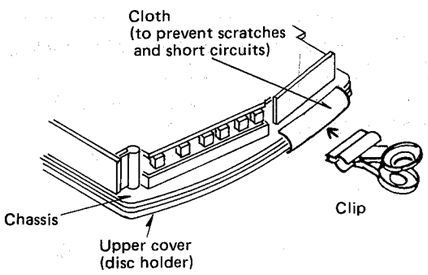


* There is a pin in the P.C.B. at **TP101 (RF).**



7. Insert the test disc.
8. Use a clip or something similar to secure the chassis and upper cover (disc holder).

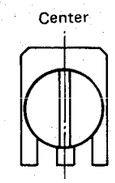




Before adjustments

1. If the optical pickup and turntable have been replaced, begin from the **"mechanical adjustment"**.
2. Each of the semi-fixed resistor turns 360°.
   Confirm the mechanical center.
   In the focus gain adjustment, if **VR104** is turned too far, the rotation of the turntable will stop. Turn a little at a time to the right or left from the mechanical center, and then switch on the power. After finding the position at which rotation begins, repeat the adjustment.

* If any of the adjustments is substantially out of adjustment, reset the semi-fixed resistor back to the mechanical center and readjust.



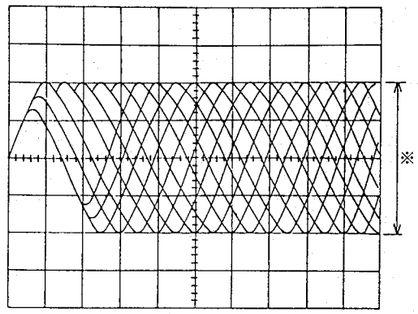
Adjusting procedure

(1) POWER SUPPLY VOLTAGE ADJUSTMENT

1. Connect the DC voltmeter across **VCC** (+) on the FPC extension cord and **TP102** (–) on the servo P.C.B. (**GND** (–) on the FPC extension cord).
2. Place the test disc and switch the player power ON.
3. Adjust **VR11** so that DC voltmeter is **4.7V** ~ **4.8V**. (Standard value : **4.75V**)

(2) MECHANICAL ADJUSTMENT

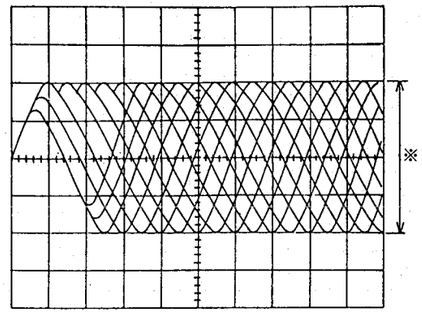
1. Connect the oscilloscope's CH. 1 probe across **TP101** (+) and **TP102** (–) (**GND** (–) on the FPC extention cord) on the Servo P.C.B.
   Oscilloscope setting: VOLT . . . . . 100 mV
   SWEEP . . . . . 0.5 μs.
   Input coupling . . . AC
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1056C).
3. Leave the player in Play mode, and place it on its right side as shown at right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0mm allen wrench until the RF signal amplitude variation on the oscilloscope is minimized.
5. After completing the adjustment, lock the **mechanical adjustments** with lock paint (RZZOL01).



※ Minimize the variation of amplitude.

(3) BEST EYE (PD BALANCE) ADJUSTMENT

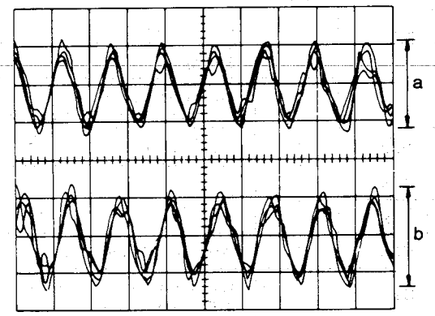
1. Connect the oscilloscope's CH. 1 probe across **TP101** (+) and **TP102** (–) (**GND** (–) on the FPC extention cord) on the Servo P.C.B.
   Oscilloscope setting: VOLT . . . . . 100 mV
   SWEEP . . . . . 0.5 μs.
   Input coupling . . . AC
2. Switch the player power **ON**, and play the 0.5 mm black dot on the test disc (SZZP1014F or SZZP1054C).
3. Adjust **VR101** until the RF signal eye pattern amplitude is maximized.



※ Maximize the amplitude.

(4) FOCUS GAIN ADJUSTMENT

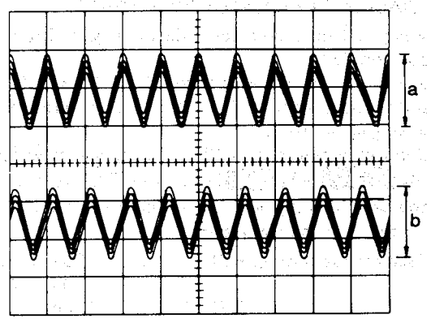
1. Connect the servo gain adjuster to the player (see page 12).
2. Set the servo gain adjuster's gain switch to position **"2"** and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825Hz, 200mVp-p,** and connect it across the OSC and GND terminals on the servo gain adjuster.
4. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT . . . . . 100 mV
   (both channels)
   SWEEP . . . . . 0.5ms.
   Input coupling . . . AC
5. Play the test disc (SZZP1014F or SZZP1054C).
6. Set the servo gain adjuster's gain switch to position "3", and you will see a 825 Hz signal on the oscilloscope. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.
7. Set the gain switch back to position **"2"**.



※ Adjust **VR104** until a equals b.

(5) TRACKING GAIN ADJUSTMENT

1. Set up the AF oscillator output for **1.1 kHz, 200mVp-p,** and connect it across the OSC and GND terminals on the servo gain adjuster.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT . . . . . 100 mV
   (both channels)
   SWEEP . . . . . 0.5ms.
   Input coupling . . . AC
3. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
4. Set the servo gain adjuster's gain switch to position "1", and you will see a 1.1 kHz signal on the oscilloscope. Adjust **VR105** until the signal amplitudes on both channels become identical to each other.
5. Set the gain switch back to position **"2"**.

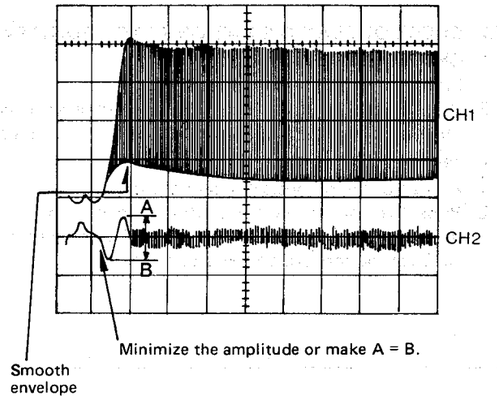


※ Adjust **VR105** until a equals b.

(6) FOCUS OFFSET ADJUSTMENT

Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

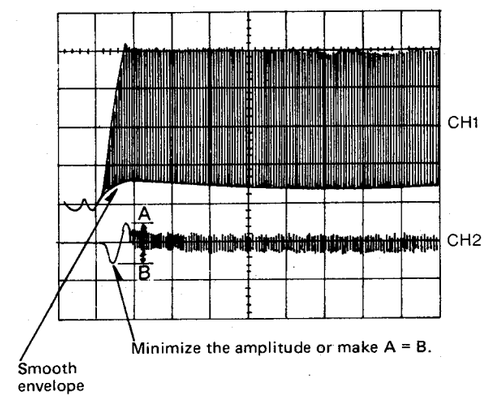
1. Connect the oscilloscope's CH. 1 probe across **TP101** (+) and **TP102** (–) (**GND** (–) on the FPC extention cord) on the Servo P.C.B., and its CH. 2 probe (+) to **TP107** (FE) terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   500mV (CH. 2)
   SWEEP. . . . . 0.5ms.
   Input coupling. . . AC (both CH. 1 and 2)
   Trigger mode . . . . NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(7) TRACKING OFFSET ADJUSTMENT

Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

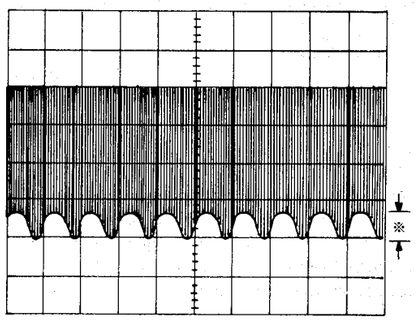
1. Connect the oscilloscope's CH. 1 probe across **TP101** (+) and **TP102** (–) (**GND** (–) on the FPC extention cord) on the Servo P.C.B., and its CH. 2 probe (+) to **TP105** (TE) terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   500mV (CH. 2)
   SWEEP. . . . . 0.5ms.
   Input coupling. . AC (both CH. 1 and 2)
   Trigger mode. . . NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR106** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(8) TRACKING BALANCE ADJUSTMENT

1. Make sure that servo gain adjuster's gain switch is set to position **"2"**.
2. Set up the AF oscillator output for **1.1 kHz, 600 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
3. Connect oscilloscope's CH. 1 probe across **TP101** (+) and **TP102** (–) (**GND** (–) on the FPC extension cord) on the Servo P.C.B. and CH. 2 probe (+) to the OSC terminal on the servo gain adjuster.

   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   200 mV (CH. 2)
   SWEEP. . . . . .0.5ms.
   Input coupling . .AC (both CH. 1 and 2)
   Trigger mode . . .NORM (trigger CH. 2)
4. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
5. Set the servo gain adjuster's gain switch to position **"1"**, and adjust **VR106** until the jitter contained in the signal waveform on CH. 1 is minimized as shown below.
6. Disconnect the servo gain adjuster's leads from the player.



※ Jitter should be minimized.

(9) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* **Checking Skip Search**

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

* **Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

* **Checking Using Defect Disc**

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the defect test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.

■ TERMINAL FUNCTION OF ICs

• IC101 (AN8373S): Servo amp.

Pin No.	Mark	I/O Division	Function
1	AMP1	I	RF signal input (X30 amp.)
2	PDAD	I	Photo detector current input (A2)
3	PDA	I	Photo detector current input (A1)
4	PDBD	I	Photo detector current input (A4)
5	PDB	I	Photo detector current input (A3)
6	LPD	I	Non-inverting laser power input
7	LD	O	Laser power auto control output
8	FBL1	I	PD balance adjustment
9	FBL2	I	
10	TBL1	I	Tracking balance adjustment
11	TBL2	I	
12	FOOFS	I	Focus offset adjustment
13	IVA	O	Current/voltage conversion output (A)
14	IVB	O	Current/voltage conversion output (B)
15	FE	O	Focus gain adjustment output
16	FPI	I	Focus error signal input
17	TPI	I	Tracking error signal input
18	C. TPL	I	Tracking error filter capacitor input
19	C. TPH		
20	C. FPL	I	Focus error filter capacitor input
21	C. FPH		

Pin No.	Mark	I/O Division	Function
22	TPO	O	Tracking error signal output
23	FPO	O	Focus error signal output
24	FGC	I	Focus gain up signal input (Not used, connected to GND)
25	TGC	I	Tracking gain up signal input (Not used, connected to GND)
26	GD	I	Focus/tracking down signal input (Not used, connected to GND)
27	PTO	O	Position detecting amp. output
28	PTI	I	Position detecting amp. input
29	PBO	O	Position detecting buffer output
30	POT	I	Position detecting buffer input
31	BDO	O	Dropout detection output
32	$\overline{\text{RFDET}}$	O	RF detection signal output
33	SDO	O	Dropout detection pulse output
34	C. SBDO	I	Dropout detecting capacitor input
35	ARF	O	RF signal output
36	C. AGC	I	AGC detecting capacitor input
37	VCC	I	Power supply (+5 V input)
38	LDON	I	Laser power control input
39	RF IN	I	RF signal input
40	AMPO	O	RF signal output
41	VREF	O	Reference voltage output
42	GND	I	Ground terminal

• IC103, IC104 (AN8385NS) : Servo & motor drive

Pin No.	Mark	I/O Division	Function
1	SGND	I	Ground terminal
2	PC1	I	Spindle motor stop control input
3	IN1	I	Spindle motor drive signal input and tracking coil drive signal input
4	$\overline{\text{RESET}}$	I	Reset signal input
5	CLK	I	R/L signal input
6	$\overline{\text{CLK}}$		
7	VCC	I	Power supply terminal
8	DZC	I	Resistor connection for dead zone compensation
9	VREF	I	Reference voltage input
10	IN2	I	Traverse motor drive signal input and focus coil drive signal input
11	PC2	I	Traverse motor brake control input
12	TC	O	Capacitor connection for triangular wave high-voltage setting

Pin No.	Mark	I/O Division	Function
13	BS2+	O	Traverse motor drive signal output and tracking coil drive signal output
14	B2–		
15	D2–		
16	D2+		
17	C2	I	Transistor base current setting capacitor connection for PWM control
18	PGND	I	Ground terminal
19	C1	I	Transistor base current setting capacitor connection for PWM control
20	D1+	O	Spindle motor drive signal output and focus coil drive signal output
21	D1–		
22	B1–		
23	B1+		
24	PVCC	I	Power supply terminal

• IC102 (AN8374S): Servo processor

Pin No.	Mark	I/O Division	Function
1	LSA	I	Phase difference input (A)
2	LSB	I	Phase difference input (B)
3	TEOFS	I	Tracking offset adjustment
4	TE	O	Tracking gain adjustment
5	TEG	I	
6	TE OUT	O	Tracking error signal output
7	TE BPF	I	Tracking error gain detecting filter (Not used, open)
8	FEG	I	Focus gain adjustment
9	FE OUT	O	Focus error signal output
10	CLW	O	Triangular wave oscillator capacitor input
11	VREF	I	Reference voltage input
12	ARF	I	RF signal input
13	CDSL	I	Data slice filter capacitor input
14	FPC	I	Frequency difference signal input
15	GND	I	Ground terminal
16	C. PLL	I	PLL loop filter constant
17	VSS	I	Ground terminal
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input
19	SRF	O	Sliced and digitized RF signal output
20	PCK	O	Clock output extracted from SRF
21	EFM	O	EFM signal output synchronous with PCK
22	VDD	I	Power supply (+5 V input)
23	SPCNT	O	Track crossing speed control output output (Not used, open)
24	SENSE	O	Selector output (track crossing state)
25	TRV	O	Traverse servo control output
26	$\overline{\text{FLOCK}}$	O	Focus lock signal output
27	KICK	O	Track kick signal output
28	LDON	O	Laser power control output
29	VDET	O	Focus/tracking gain up output (Not used, open)
30	CNT1	I	Control input (FOON: Focus servo ON signal)
31	CNT2	I	Control input (TRON: Tracking servo ON signal)
32	CNT3	I	Control input (KICKF: Kick direction (forward) command)
33	CNT4	I	Control input (KICKR: Kick direction (reverse) command)
34	TRVF	I	Traverse forward command signal
35	TRVR	I	Traverse backward command signal
36	$\overline{\text{RFDET}}$	I	RF detection signal input
37	BDO	I	Dropout detection input
38	VCC	I	Power supply (+5 V input)
39	TVPO	O	Traverse position detecting resistor/capacitor inputs
40	TVPI	I	
41	BROUT	O	Tracking drive control output
42	BRIN	I	Tracking error signal input

• IC301 (SM5807ES) : Digital filter

Pin No.	Mark	I/O Division	Function
1	XT	I	Osicllator input
2	$\overline{\text{XT}}$	O	Oscillator output (not used, open)
3	$\overline{\text{CKSL}}$	I	CKSL = H : External input of 16.9344 MHz or 17.2872 MHz to XT CKSL = L : External input of 8.4672 MHz or 8.6436 MHz to XT
4	CKO	O	Clock output (not used, open)
5	LRCI	I	44.1 kHz synchronization clock input
6	DIN	I	Serial data input
7	BCKI	I	Serial data bit clock input
8	VSS	I	Digital ground terminal
9	$\overline{\text{SCSL}}$	I	SCSL = H : System clock = 192 fs SCSL = L : System clock = 196 fs (fs = sampling frequency)
10	DGR	O	R ch deglitch signal (176.4 kHz) (not used, open)
11	DGL	O	L ch deglitch signal (176.4 kHz) (not used, open)
12	D OUT	O	Serial data output
13	WDCO	O	Output control data (352.8 kHz)
14	$\overline{\text{LRCO}}$	O	Output control clock (176.4 kHz)
15	BCKO	O	Serial bit clock output (8.4672 MHz or 8.6436 MHz)
16	VDD	I	Power supply terminal

• IC201 (MN15845PEQ) : System control

Pin No.	Mark	I/O Division	Function
1	VDD	I	Power supply (connected to +5V)
2	OSC1	I	Clock input (4.2336 MHz)
3	OSC2	O	Not used, open
4	TCNT	I	Track count input (trackcross input in rough search)
5	X0	O	Not used, open
6	$\overline{\text{RESET}}$	I	Reset signal input (reset at "L")
7	$\overline{\text{SYNC}}$	O	Not used, open
8	BLKCK	I	Q data read-in timing strobe signal input (sub-code block clock : 75 Hz)
9	$\overline{\text{SIRQ}}$	I	Data clock
10	$\overline{\text{SUBQ}}$	I	Q data read-in input (sub-code Q code)
11	$\overline{\text{SBO}}$	O	Not used, open
12	$\overline{\text{CLDCK}}$	I	Q data read-in data strobe signal input (sub-code block clock : 7.35 kHz)
13 ~ 16	P40 ~ P43	I	Key return signal input
17	MCLK	I/O	Key input strobe and data clock output
18	MDATA	I/O	Key input strobe and data output
19	STROBE	I/O	Key input strobe signal
20	MLD	O	Data strobe signal output (signal processing LSI command load output)
21	$\overline{\text{SENSE}}$	I	Optical servo status (track cross) input
22	$\overline{\text{FLOCK}}$	I	Optical servo status (focus) input
23	BATT	I	Battery voltage detection signal input
24	STAT	I	Processing status input from signal processing LSI
25	CNT4	O	Optical servo IC control signal (KICKR : Kick direction [reverse] command)
26	CNT3	O	Optical servo IC control signal (KICKF : Kick direction [forward] command)
27	CNT2	O	Optical servo IC control signal ($\overline{\text{TRON}}$: Track servo)
28	CNT1	O	Optical servo IC control signal ($\overline{\text{FOON}}$: Focus servo)
29	POWER	O	Power save control (power save at "H")
30	TRREV	O	Traverse motor reverse command signal
31	TRFWD	O	Traverse motor forward command signal
32	MUTE	O	Muting control (muting ON at "H")
33	VLCD 1	I	LCD drive power supply (3.1V)
34	VLCD 2	I	LCD drive power supply (1.5V)
35	VLCD 3	I	LCD drive power supply (0V)
36 ~ 38	COM0 ~ COM2	O	LCD common line output
39	COM3	O	Not used, open
40 ~ 44	SEG0 ~ SEG4	O	LCD segment line output
45 ~ 47	SEG5 ~ SEG7	O	Not used, open
48 ~ 63	SEG8 ~ SEG23	O	LCD segment line output
64	VSS	I	GND terminal

• IC202

Pin No.	Ma
1	BLKCI
2	$\overline{\text{CLDCI}}$
3	$\overline{\text{SUBQ}}$
4	CRC
5	$\overline{\text{RST}}$
6	MLD
7	MCLK
8	MDAT
9	DMUTI
10	$\overline{\text{TRON}}$
11	STAT
12	SMCK
13	PMCK
14	ITC
15	$\overline{\text{TEST}}$
16	X2
17	X1
18	SEL
19	LDG/W
20	RDG
21	DEMPH
22	IPFLAG
23	FLAGO
24	FLAG6
25	XCK
26	SRDAT
27	SRDAT
28	SRCK
29	WDCK
30	BYTCK
31	GND
32	R/L

Function
ing status input from signal ing LSI
servo IC control signal R : Kick direction [reverse] nd)
servo IC control signal : Kick direction [forward] nd)
servo IC control signal : Track servo)
servo IC control signal : Focus servo)
ave control save at "H")
e motor reverse command
e motor forward command
control ON at "H")
ive power supply (3.1V)
ive power supply (1.5V)
ive power supply (0V)
common line output
d, open
egment line output
sed, open
egment line output
rminal

• IC202 (MN6617) Digital signal processing : EFM decoder, Error correction, CLV servo

Pin No.	Mark	I/O Division	Function
1	BLKCK	O	Sub-code block (Q data) clock (75Hz)
2	$\overline{\text{CLDCK}}$	O	Sub-code frame (Q data) clock (7.35kHz)
3	$\overline{\text{SUBQ}}$	O	Sub-code (Q data) output
4	CRC	O	Sub-code (Q data) CRC check (Not used, open)
5	$\overline{\text{RST}}$	I	Reset signal input (reset at "L")
6	MLD	I	Command load input
7	MCLK	I	Command clock input
8	MDATA	I	Command data input
9	DMUTE	I	Muting control (Not used, connected to GND)
10	$\overline{\text{TRON}}$	I	Tracking servo ON signal (tracking servo ON at "L")
11	STAT	O	Processing condition (CRC, OTC, CLVOK, TT STOP) output
12	SMCK	O	Clock output (4.2336MHz)
13	PMCK	O	Pitch control clock output (Not used, open)
14	ITC	I	Track counter input signal (Not used, open)
15	$\overline{\text{TEST}}$	I	Test mode selection (Not used, connected to +5V)
16	X2	O	Clock output (Not used, open)
17	X1	I	Clock input
18	SEL	I	DA output parallel/serial selection (serial at "L") (Not used, connected to GND)
19	LDG/WDC	O	L channel deglitch signal/serial data word clock. (Not used, open)
20	RDG	O	Clock signal output for spindle motor control (Not used, open)
21	DEMPH	O	De-emphasis ON signal (de-emphasis ON at "H") (Not used, open)
22	IPFLAG	O	Interpolation flag (interpolation at "H") (Not used, open)
23	FLAGO	O	Error flag (error at "H") (Not used, open)
24	FLAG6	O	16K RAM address reset signal (reset at "H") (Not used, open)
25	XCK	O	Clock (16.9344MHz) output (Not used, open)
26	SRDATA	O	Serial data output (MSB first)
27	SRDATA	O	Serial data output (LSB first) (Not used, open)
28	SRCK	O	Serial data beat clock.
29	WDCK	O	Serial data word clock (Not used)
30	BYTCK	O	Serial data byte clock (Not used, open)
31	GND	I	GND terminal
32	R/L	O	R/L signal

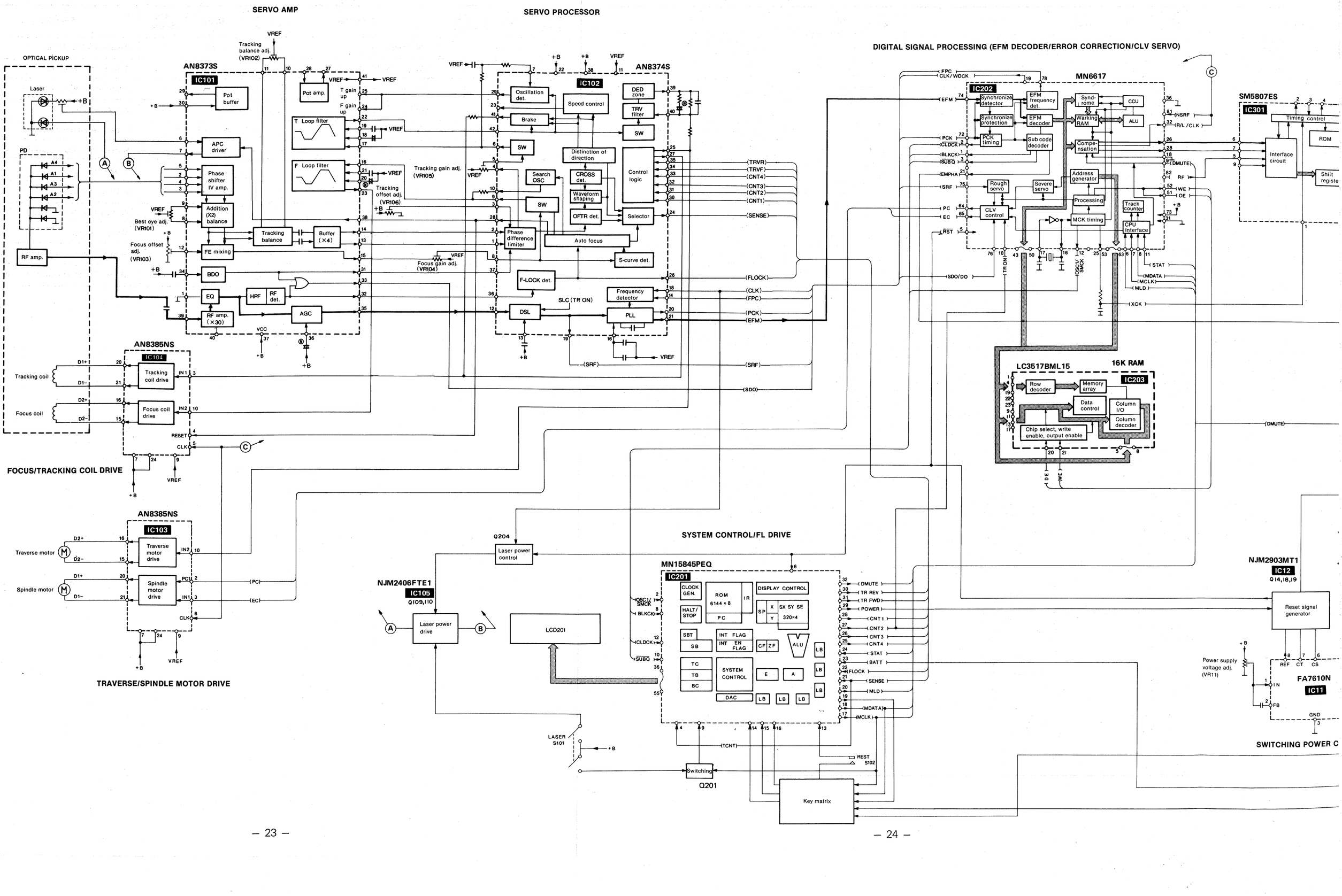
Pin No.	Mark	I/O Division	Function
33	RESY	O	Resynchronizing signal (Not used, open)
34	FCLV	O	Synchronizing detection signal (Not used, open)
35	IPBYTE	O	Interpolation flag for each byte (Not used, open)
36	IPSEL	I/O	Interpolation prohibited (Not used, connected to GND)
37	FLAG5	O	C2 decoder correction flag 3 (Not used, open)
38	FLAG4	O	C2 decoder correction flag 2 (Not used, open)
39	FLAG3	O	C2 decoder correction flag 1 (Not used, open)
40	FLAG2	O	C1 decoder correction flag 2 (Not used, open)
41	FLAG1	O	C1 decoder correction flag 1 (Not used, open)
42	FLCK	O	Crystal frame clock
43 ~ 50	D7 ~ D0	I/O	16K RAM data output
51	RAMOE	O	16K RAM $\overline{\text{OE}}$ signal
52	RAMWE	O	16K RAM $\overline{\text{WE}}$ signal
53 ~ 63	RAMA0 ~ RAMA10	O	16K RAM address signal (RAMA0: LSB, RAMA10: MSB)
64	PC	O	Spindle motor ON signal (ON at "L")
65	EC	O	Spindle motor drive signal
66	FG	I	Spindle motor FG signal input (Not used, open)
67	VCNT	——	(Not used, open)
68	REXT	——	(Not used, open)
69	VDD	I	Power supply (+5V)
70	PD	——	(Not used, open)
71	PCKO	——	(Not used, open)
72	PCK	I	PLL extract clock input
73	VDD	I	Power supply (connected to +5V)
74	EFM	I	EFM signal input (PLL)
75	SRF	I	EFM signal input (DSL)
76	DO	I	Drop-out signal (Drop-out at "H")
77	CLVS	O	11T servo OK signal (OK at "H") (Not used, open)
78	FPC	O	PLL frequency comparision signal
79	BSSEL	O	PLL frequency in take operation signal. (Not used, open)
80	SRFO	——	(Not used, open)
81	NSRF	——	(Not used, open)
82	RF	——	(Not used, open)
83	SUBC	O	Sub-code serial output data (Not used, open)
84	SBCK	I	Clock for sub-code serial output (Not used, open)

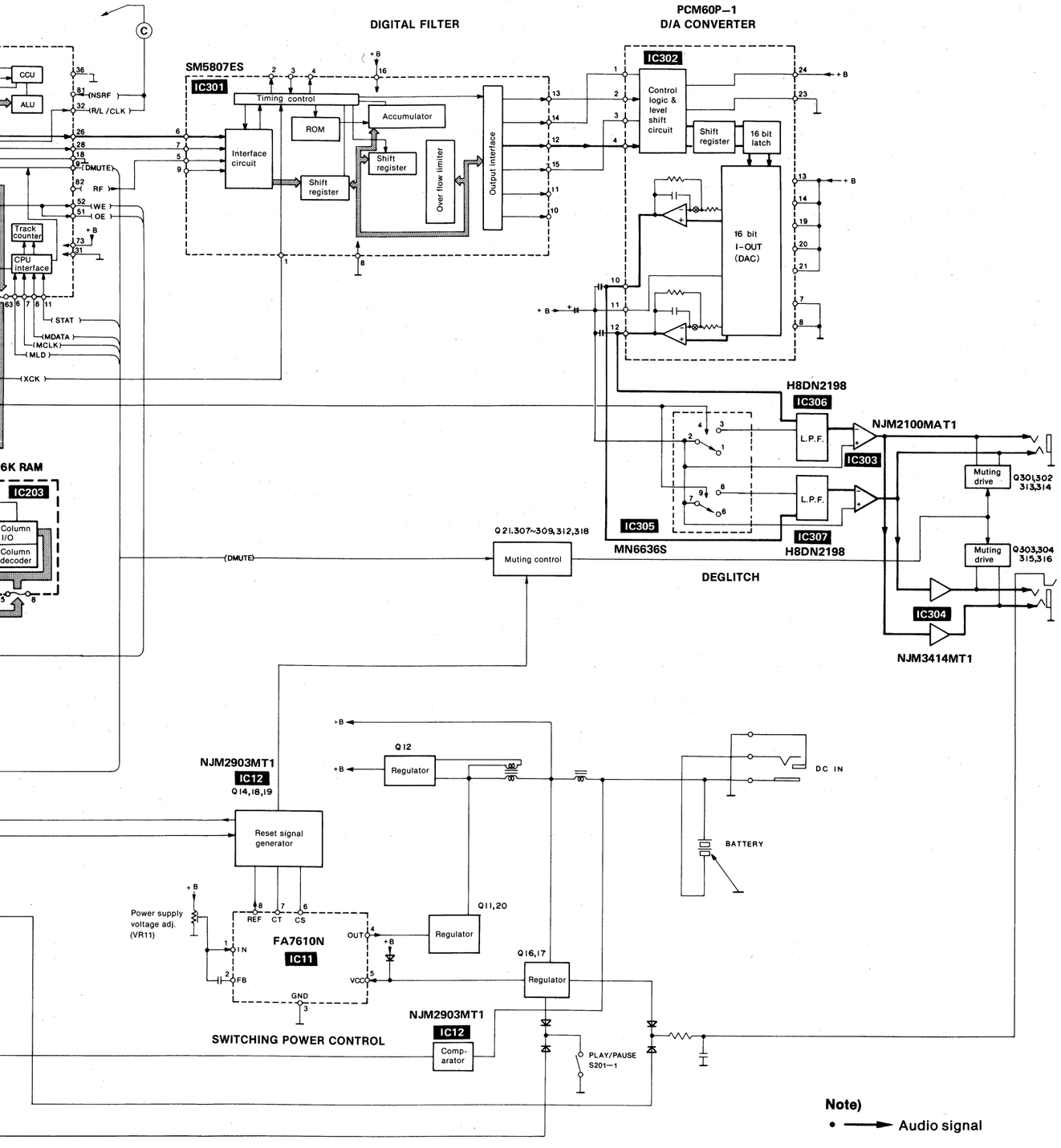
• IC302 (PCM60P-1) : D/A converter

Pin No.	Mark	I/O Division	Function
1	L/R CK	I	LR clock input
2	WDCK	I	Word clock input
3	SRCK	I	Serial bit clock input
4	SR DATA	I	Serial data input
5	NC	—	Not connected
6	NC	—	Not connected
7	VSS	I	Digital ground terminal
8	A. GND	I	Analog ground terminal
9	NC	—	Not connected
10	L-OUT	O	R ch signal output
11	VCOM	I	V-common terminal
12	R-OUT	O	L ch signal output

Pin No.	Mark	I/O Division	Function
13	A. VCC	I	Analog +5V terminal
14	A. VCC	I	Analog +5V terminal
15	C REF	I	Capacitor connection
16	NC	—	Not connected
17	VSENSE	I	Capacitor connection
18	V REF	O	Reference voltage output
19	A. VCC	I	Analog +5V terminal
20	A. VCC	I	Analog +5V terminal
21	VDD	I	Analog +5V terminal
22	NC	—	Not connected
23	M1	I	Mode 1 input (connected to GND)
24	M2	I	Mode 2 input (connected to +5V)

■ BLOCK DIAGRAM





■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

- **S101** : Laser ON/OFF switch in "**off**" position. (It turns "**on**" with disc holder closed.)
- **S102** : Rest switch in **"off"** position. (It turns "**on**" when optical pickup comes to inner-most periphery.)
- **S201-1** : Play/pause switch.
- **S201-2** : Stop/power off switch.
- **S201-3** : Skip/search (Forward) switch.
- **S201-4** : Skip/search (Backward) switch.
- **S201-5** : Repeat switch.
- **S201-6** : Memory/recall switch.
- **S202** : Play mode selector switch. (random ⟷ resume ⟷ normal)
- **S301** : High filter switch in "**off**" position.
- The voltage value and waveforms are the reference voltage of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of GND terminal (DC IN Jack). Accordingly, there may arise some error in the voltage values and waveforms depending upon the internal impedance of the tester or measuring unit.
  * The parenthesized is the voltage for test disc (1 kHz, L + R, 0 dB) in play mode, and the other, for no disc in stop mode.
  * AC adaptor (SH-CDA6U) is used for power supply.

- —≺≻— : Positive voltage lines.
  ▒▒▒▒ : Aduio signal lines.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

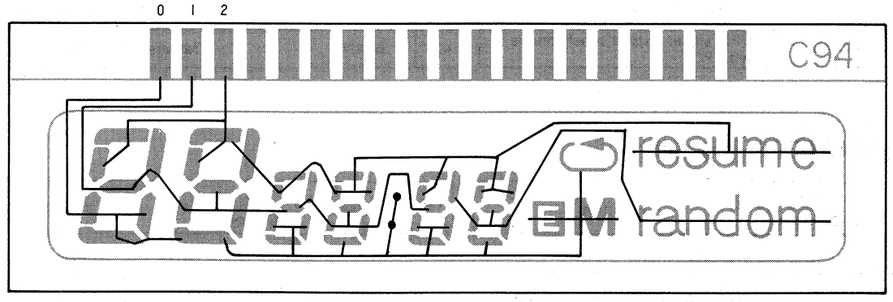
* Caution !

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

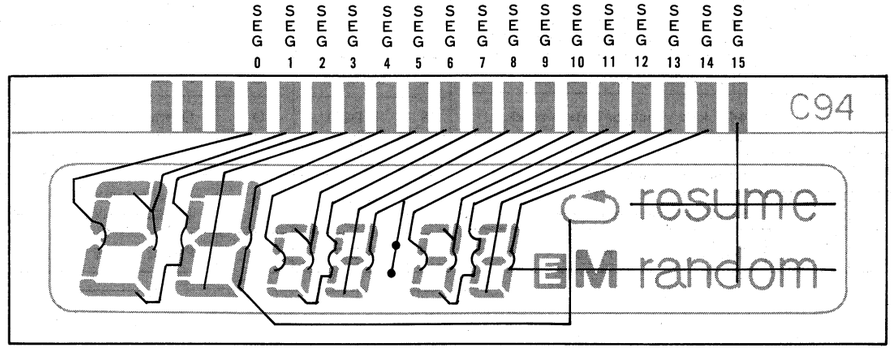
* Cover the parts boxed made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with fingers directly.

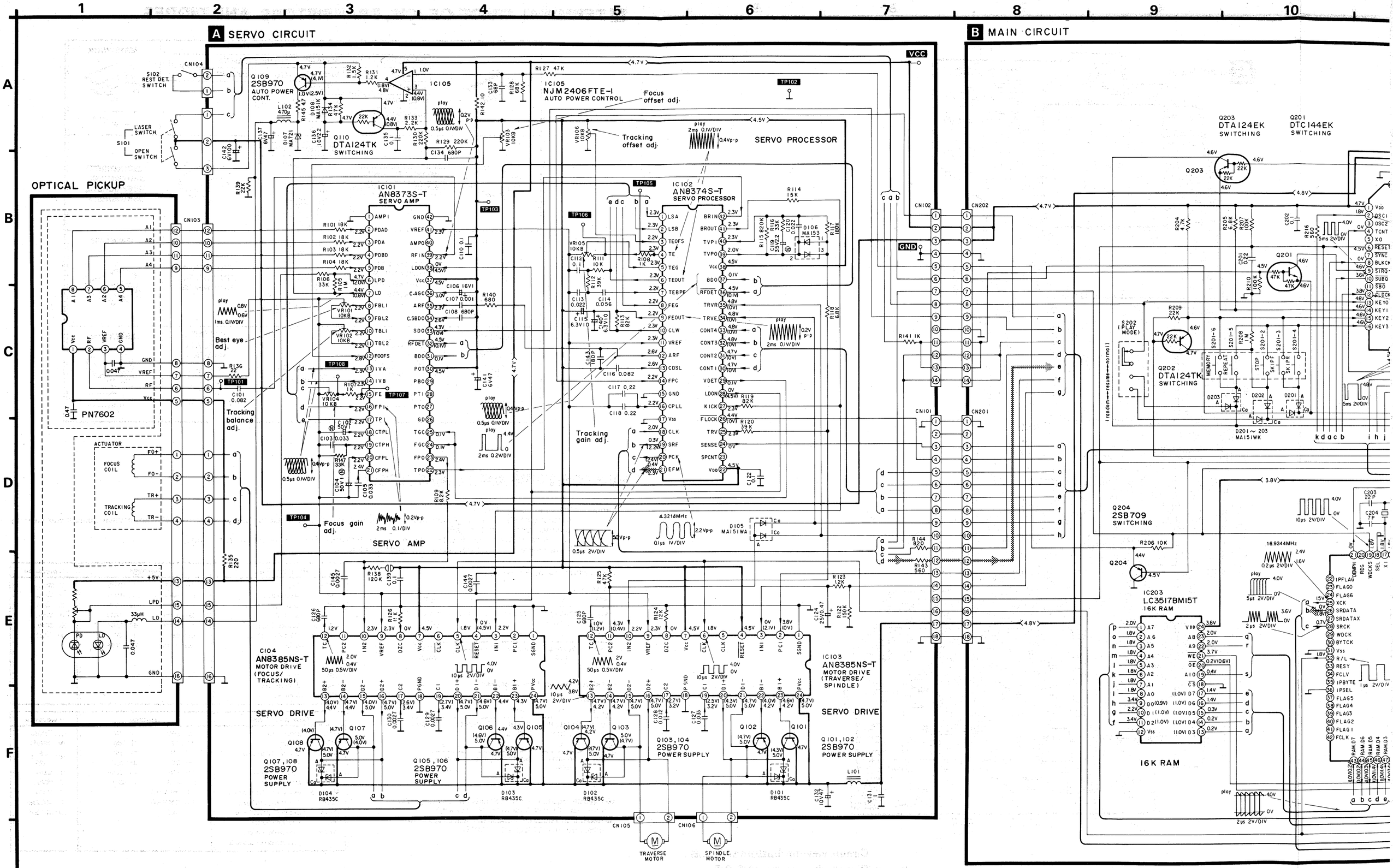
• INTERNAL CONNECTIONS OF LCD (Liquid crystal display)

Common connection diagram

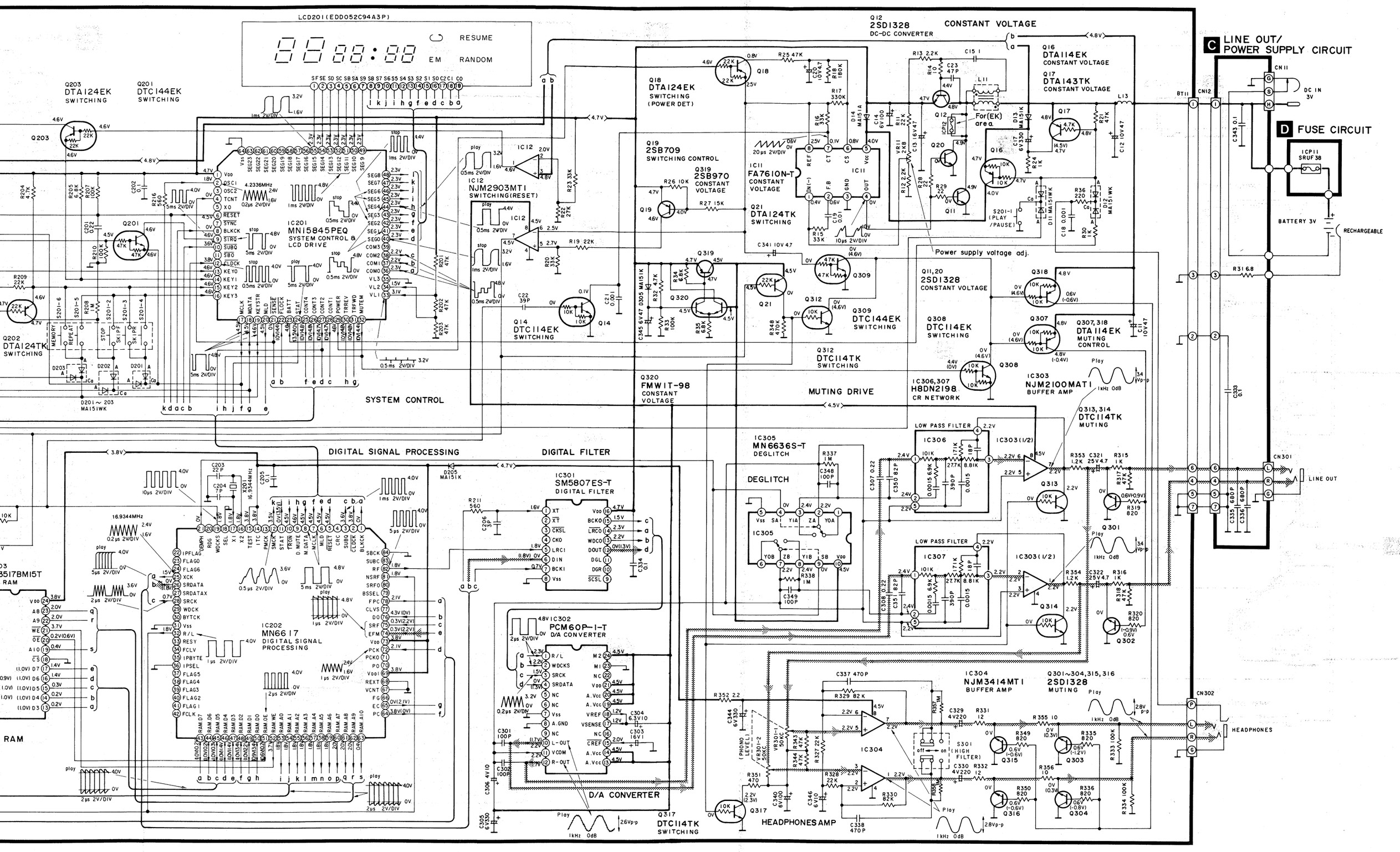


Segment connection diagram

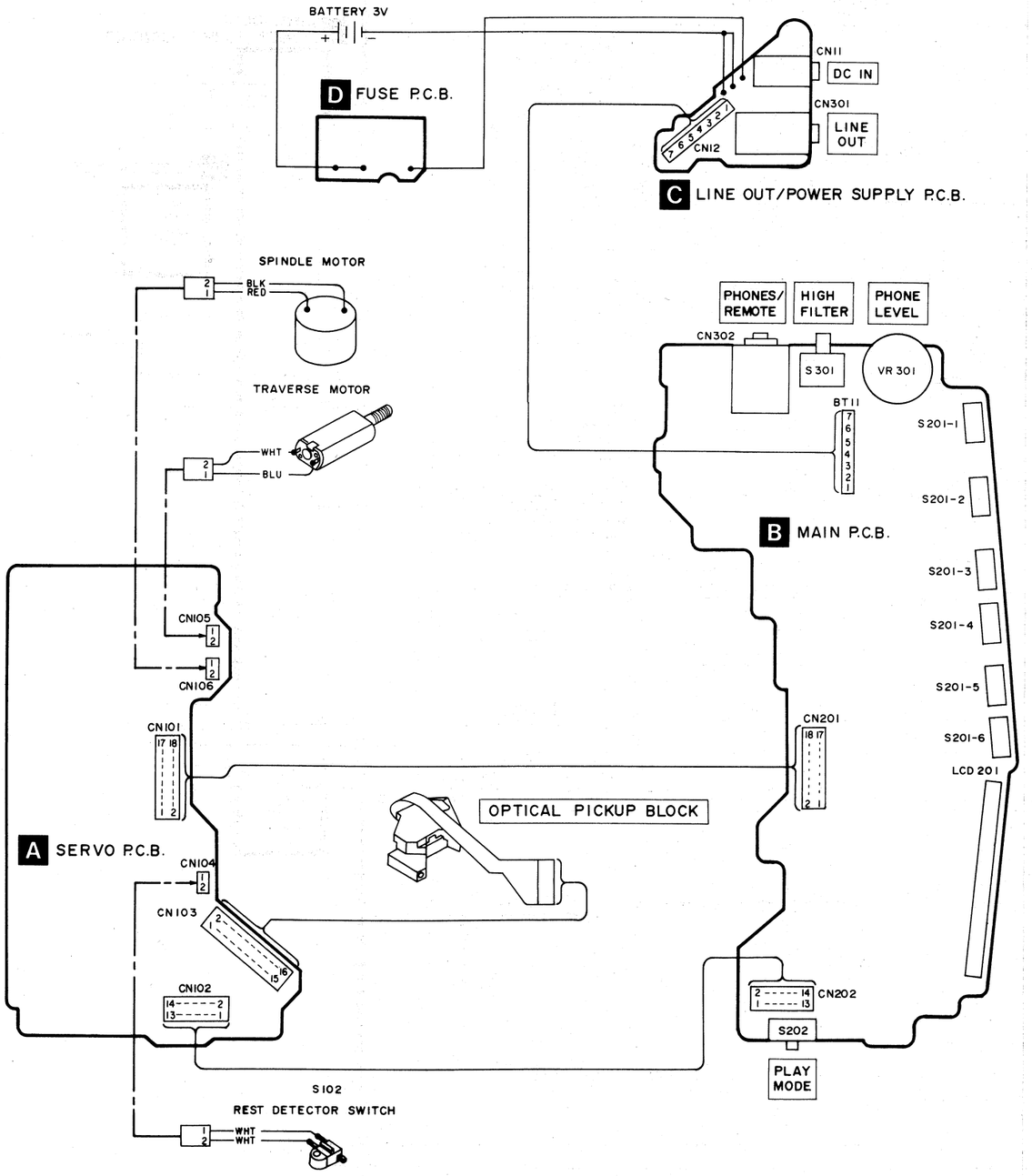


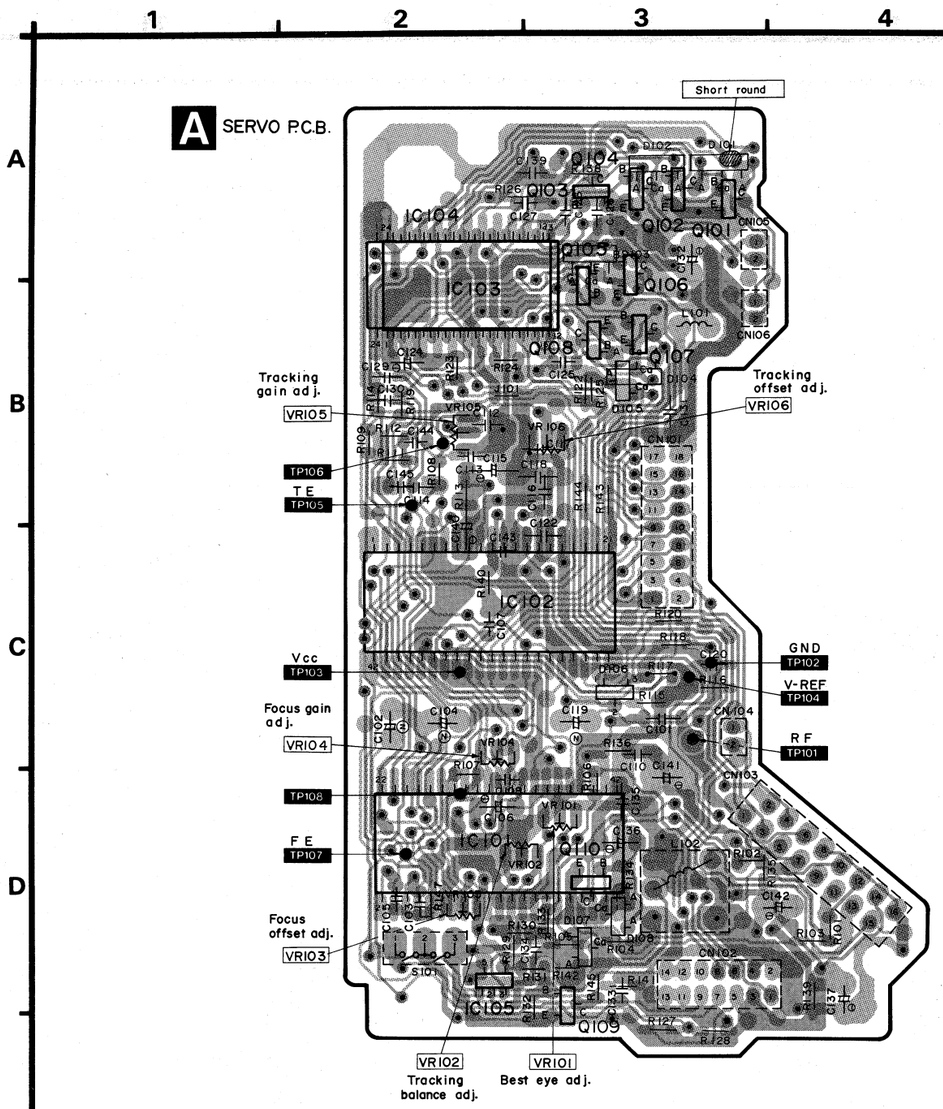

A SERVO CIRCUIT
B MAIN CIRCUIT
OPTICAL PICKUP
ACTUATOR
FOCUS COIL
TRACKING COIL
PN7602
SERVO AMP
IC101 AN8373S-T SERVO AMP
IC102 AN8374S-T SERVO PROCESSOR
SERVO PROCESSOR
IC105 NJM2406FTE-I AUTO POWER CONTROL
Q109 2SB970 AUTO POWER CONT.
Q110 DTA124TK SWITCHING
S102 REST DET. SWITCH
S101 LASER SWITCH
OPEN SWITCH
Tracking balance adj.
Best eye adj.
Tracking offset adj.
Tracking gain adj.
Focus offset adj.
Focus gain adj.
C104 AN8385NS-T MOTOR DRIVE (FOCUS/ TRACKING)
IC103 AN8385NS-T MOTOR DRIVE (TRAVERSE/ SPINDLE)
SERVO DRIVE
Q107,108 2SB970 POWER SUPPLY
Q105,106 2SB970 POWER SUPPLY
Q103,104 2SB970 POWER SUPPLY
Q101,102 2SB970 POWER SUPPLY
TRAVERSE MOTOR
SPINDLE MOTOR
Q203 DTA124EK SWITCHING
Q201 DTC144EK SWITCHING
Q202 DTA124TK SWITCHING
Q204 2SB709 SWITCHING
IC203 LC3517BM15T 16K RAM
16K RAM
VCC
GND

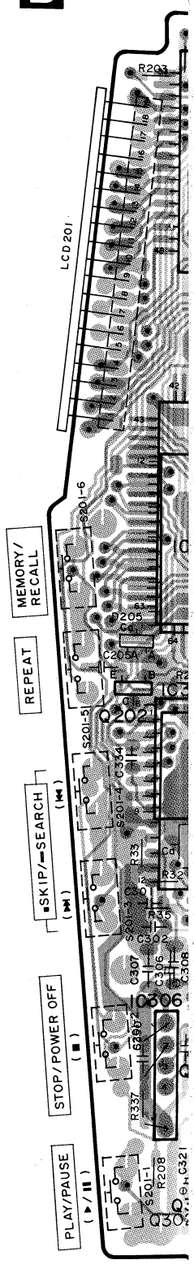
9 10 11 12 13 14 15 16 17 18 19

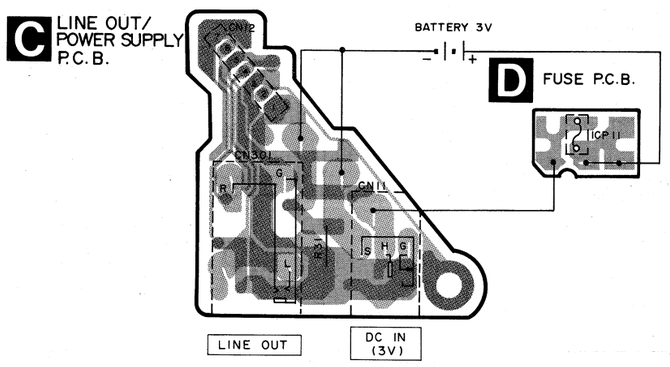


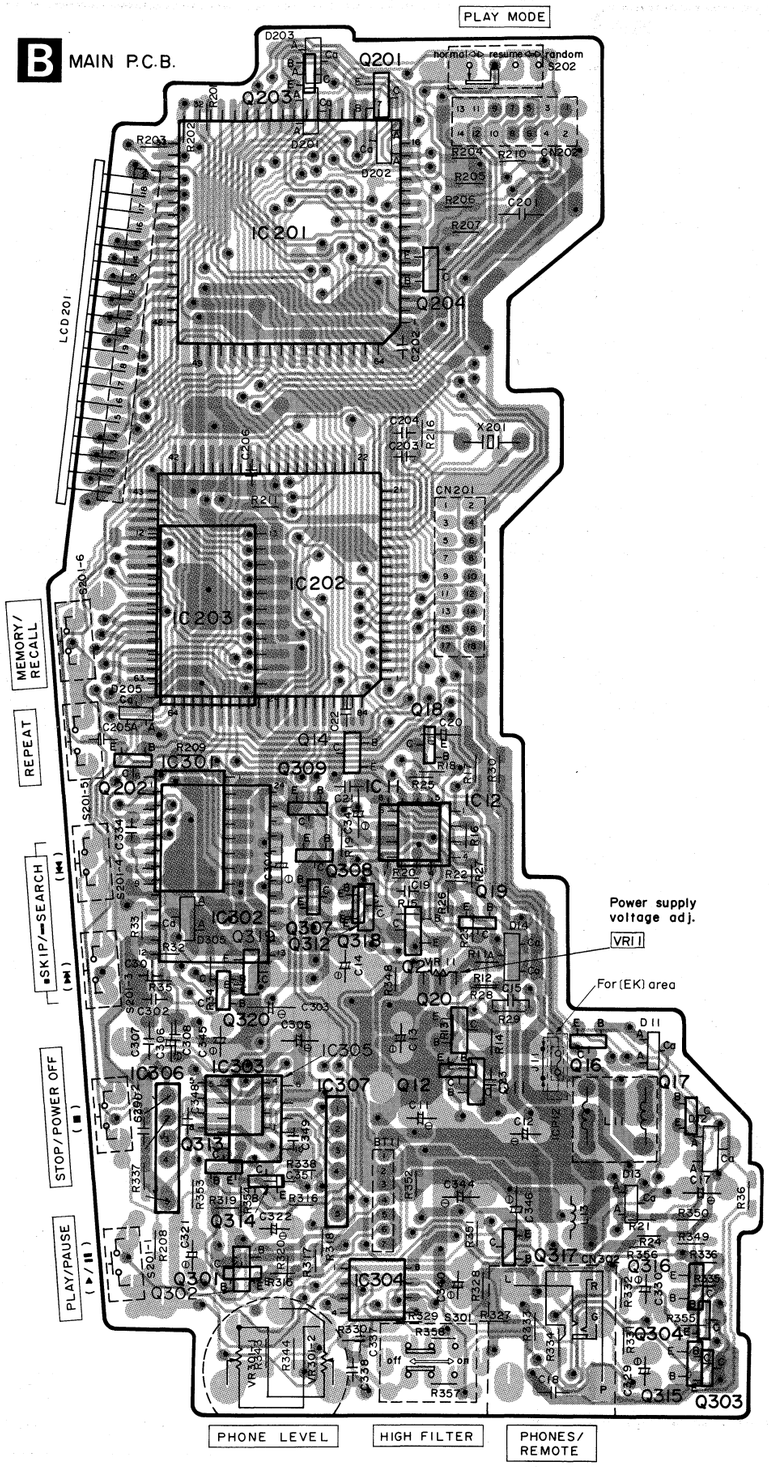
■ WIRING CONNECTION DIAGRAM







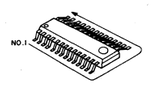




Circuit view on bottom of P.C.B.

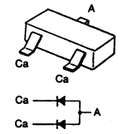
Circuit view on top of P.C.B.

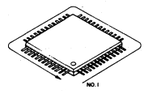
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



NJM2406FTE1	5 Pin	MN6636S	10 Pin	AN8373S	42 Pin
FA7610N	8 Pin	SM5807ES	16 Pin	AN8374S	
NJM2903MT1		AN8385S	24 Pin		
NJM2100MAT1		LC3517BML15			
NJM3414MT1		PCM60P-1			

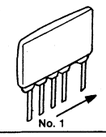
MA151WATX

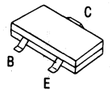




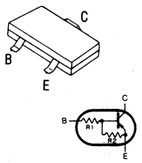
MN15845PEQ	64 Pin
MN6617	84 Pin

H8DN2198 5 Pin

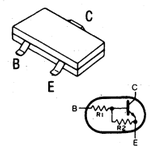




2SD1328RSTTX,
2SD1328STTX,
2SB970QRSTX,
2SB709QRSTX

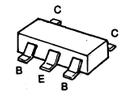


DTA114EKT96,
DTA124EKT96,
DTA124TKT96,
DTA143TKT96

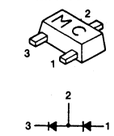


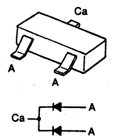
DTC114EKT96,
DTC114TKT96,
DTC144EKT96

FMW1T-98



MA153TX

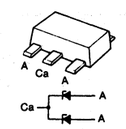




MA151WKTX,
RB435CT100

MA151KTX,
MA151ATX,
MA721TX

RB435CT100



■ RESISTORS AND CAPACITORS

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Numbering System For Resistors

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1KΩ)
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470Ω)

Numbering System For Capacitors

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001μF)	Tolerance	Unique
ECEA	50	M		330
Type	Voltage (50V)	Characteristics		Value (33μF)

- Capacity values are in microfarads (μF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
- Resistance values are in ohms (Ω), unless specified otherwise, 1K = 1,000Ω, 1M = 1,000kΩ

Resistor Type		Wattage		Tolerance
ERD	: Carbon	10 : 1/8W	12 : 1/2W	J : ±5%
ERG	: Metal Oxide	14 : 1/4W	25 : 1/4W	F : ±1%
ERQ	: Fuse Type Metal	1A : 1W	18 : 1/8W	G : ±2%
ERX	: Metal Film	S2 : 1/4W	S1 : 1/2W	J : ±5%
ERD L	: Carbon (chip)	2F : 1/4W	50 : 1/2W	K : ±10%
ERO K	: Metal Film (chip)	2A : 2W	3A : 3W	M : ±20%
ERC	: Solid	6G : 1/10W	8G : 1/8W	
ERF	: Incombustible Box-Shaped			
ERM	: Wire-Wound			
RRJ	: Chip Resistor			
ERJ	: Chip Resistor			

Capacitor Type		Voltage		Tolerance
ECE	: Electrolytic	0J : 6.3V	1A : 10V	K : ±10%
ECCD	: Ceramic	1C : 16V	1E : 25V	M : ±20%
ECKD	: Ceramic Capacitor	1H : 50V	1V : 35V	Z : +80 % −20
ECQM	: Polyester	50 : 50V	05 : 50V	J : ±5%
ECQP	: Polypropylene	2H : 500V	2A : 100V	G : ±2%
ECG	: Ceramic	1 : 100V	1J : 63V	F : ±1%
ECEA N	: Non Polar Electrolytic	KC : 400V AC		C : ±0.25pF
QCU	: Ceramic (Chip Type)	KC : 125V AC		D : ±0.5pF
ECUX	: Ceramic (Chip Type)	(UL)		
ECF	: Semiconductor			
EECW	: Liquid electrolyte double layer capacitor			

Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)		
R11	ERJ6GEYJ223V	22K 1/10
R12	ERJ6GEYJ222V	2.2K 1/10
R13	ERJ6GEYJ222V	2.2K 1/10
R14	ERJ6GEYJ100V	10 1/10
R15	ERJ6GEYJ333V	33K 1/10
R16	ERJ6GEYJ333V	33K 1/10
R17	ERJ6GEYJ334V	330K 1/10
R18	ERJ6GEYJ184V	180K 1/6
R19	ERJ6GEYJ223V	22K 1/10
R20	ERJ6GEYJ333V	33K 1/10
R21	ERJ6GEYJ473V	47K 1/10
R22	ERJ6GEYJ273V	27K 1/10
R23	ERJ6GEYJ333V	33K 1/10
R24	ERJ6GEYJ102V	1K 1/10
R25	ERJ6GEYJ473V	47K 1/10
R26	ERJ6GEYJ103V	10K 1/10
R27	ERJ6GEYJ153V	15K 1/10
R28	ERJ6GEYJ220V	22 1/6
R29	ERJ6GEYJ220V	22 1/6
R30	ERJ6GEYJ102V	1K 1/10
R31	SRR06J6R8TNR	6.8 1/10
R32	ERJ6GEYJ472V	4.7K 1/10
R33	ERJ6GEYJ104V	100K 1/10
R34	ERJ6GEYJ682V	6.8K 1/10
R35	ERJ6GEYJ682V	6.8K 1/10
R36	ERJ6GEYJ221V	220 1/6
R101	ERJ6GEYJ183V	18K 1/10
R102	ERJ6GEYJ183V	18K 1/10
R103	ERJ6GEYJ183V	18K 1/10
R104	ERJ6GEYJ183V	18K 1/10
R105	ERJ6GEYJ105V	1M 1/6
R106	ERJ6GEYJ333V	33K 1/10
R107	ERJ6GEYJ102V	1K 1/10
R108	ERJ6GEYJ102V	1K 1/10
R109	ERJ6GEYJ822V	8.2K 1/10
R111	ERJ6GEYJ103V	10K 1/10
R112	ERJ6GEYJ393V	39K 1/10
R113	ERJ6GEYJ823V	82K 1/6
R114	ERJ6GEYJ153V	15K 1/10
R115	ERJ6GEYJ824V	820K 1/10
R116	ERJ6GEYJ333V	33K 1/10
R117	ERJ6GEYJ184V	180K 1/6
R118	ERJ6GEYJ682V	6.8K 1/10
R119	ERJ6GEYJ823V	82K 1/6
R120	ERJ6GEYJ393V	39K 1/10
R122	ERJ6GEYJ154V	150K 1/10
R123	ERJ6GEYJ122V	1.2K 1/6
R124	ERJ6GEYJ123V	12K 1/6
R125	ERJ6GEYJ473V	47K 1/10
R126	ERJ6GEYJ153V	15K 1/10
R127	ERJ6GEYJ473V	47K 1/10
R128	ERJ6GEYJ683V	68K 1/10
R129	ERJ6GEYJ224V	220K 1/10
R130	ERJ6GEYJ224V	220K 1/10
R131	ERJ6GEYJ122V	1.2K 1/6
R132	ERJ6GEYJ152V	1.5K 1/10
R133	ERJ6GEYJ222V	2.2K 1/10
R134	ERJ6GEYJ473V	47K 1/10
R135	ERJ6GEYJ221V	220 1/6
R136	ERJ6GEYJ220V	22 1/6
R138	ERJ6GEYJ124V	120K 1/10
R139	ERJ6GEYJ223V	22K 1/10
R140	ERJ6GEYJ681V	680 1/10
R141	ERJ6GEYJ102V	1K 1/10
R142	ERJ6GEYJ100V	10 1/10
R143	ERJ6GEYJ561V	560 1/10
R144	ERJ6GEYJ821V	820 1/10
R145	ERJ6GEYJ4R7V	4.7 1/10
R147	ERJ6GEYJ333V	33K 1/10
R201	ERJ6GEYJ473V	47K 1/10
R202	ERJ6GEYJ473V	47K 1/10
R203	ERJ6GEYJ473V	47K 1/10
R204	ERJ6GEYJ472V	4.7K 1/10
R205	ERJ6GEYJ682V	6.8K 1/10
R206	ERJ6GEYJ103V	10K 1/10
R207	ERJ6GEYJ104V	100K 1/10
R208	ERJ6GEYJ105V	1M 1/6
R209	ERJ6GEYJ223V	22K 1/10
R210	ERJ6GEYJ104V	100K 1/10
R211	ERJ6GEYJ561V	560 1/10
R216	ERJ6GEYJ561V	560 1/10
R315	ERJ6GEYJ102V	1K 1/10
R316	ERJ6GEYJ102V	1K 1/10
R317	ERJ6GEYJ473V	47K 1/10
R318	ERJ6GEYJ473V	47K 1/10
R319	ERJ6GEYJ821V	820 1/10
R320	ERJ6GEYJ821V	820 1/10
R327	ERJ6GEYJ223V	22K 1/10
R328	ERJ6GEYJ223V	22K 1/10
R329	ERJ6GEYJ823V	82K 1/6
R330	ERJ6GEYJ823V	82K 1/6
R331	ERJ6GEYJ120V	12 1/10
R332	ERJ6GEYJ120V	12 1/10
R333	ERJ6GEYJ104V	100K 1/10
R334	ERJ6GEYJ104V	100K 1/10
R335	ERJ6GEYJ821V	820 1/10
R336	ERJ6GEYJ821V	820 1/10
R337	ERJ6GEYJ105V	1M 1/6
R338	ERJ6GEYJ105V	1M 1/6
R343	ERJ6GEYJ473V	47K 1/10
R344	ERJ6GEYJ473V	47K 1/10
R348	ERJ6GEYJ474V	470K 1/10
R349	ERJ6GEYJ821V	820 1/10
R350	ERJ6GEYJ821V	820 1/10
R351	ERJ6GEYJ471V	470 1/10
R352	ERJ6GEYJ2R2V	2.2 1/6
R353	ERJ6GEYJ122V	1.2K 1/6
R354	ERJ6GEYJ122V	1.2K 1/6
R355	ERJ6GEYJ100V	10 1/10
R356	ERJ6GEYJ100V	10 1/10
R357	ERJ6GEYJ105	1M 1/6
R358	ERJ6GEYJ105	1M 1/6
CAPACITORS(VALUE,VOLTAGE)		
C11	ECEA1AKS470	47 10
C12	ECEA1AKS470	47 10
C13	SRX01C470GNJ	47 10
C14	ECEA0JKS101I	100 6.3
C15	ECUV1C105ZF	1 16
C17	ECEA0JKS331	330 6.3
C18	RCUV1H102KB	0.001 50
C19	RCUV1H103KB	0.01 50
C20	ECST1AX475L	4.7 10

Ref. No.	Part No.	Value.
C21	RCUV1H102KB	0.001 50
C22	RCUV1H390KC	39P 50
C23	RCUV1H470KC	47P 50
C101	ECUV1E823KB	0.082 25
C102	ECEA1HSN010I	1 50
C103	RCUV1E333KB	0.033 25
C104	ECEA1HSN010I	1 50
C105	RCUV1E333KB	0.033 25
C106	ECST1CY105L	1 16
C107	RCUV1H102KB	0.001 50
C108	RCUV1H681KB	680P 50
C110	RCUV1E104ZF	0.1 25
C112	ECUV1C104KB	0.1 16
C113	RCUV1E223KB	0.022 25
C114	ECUV1E563KB	0.056 25
C115	ECST0JB106L	10 6.3
C116	ECUV1E823KB	0.082 25
C117	ECUV1C224KR	0.22 16
C118	ECUV1C224KR	0.22 16
C119	ECEA1VSN2R2I	2.2 35
C120	RCUV1E223KB	0.022 25
C122	ECUV1E104ZF	0.1 25
C124	ECST1EY474L	0.47 25
C125	RCUV1H681KB	680P 50
C126	RCUV1H681KB	680P 50
C127	RCUV1E333KB	0.033 25
C128	RCUV1E123KB	0.012 25
C129	RCUV1H272KB	2700P 50
C130	RCUV1H272KB	2700P 50
C131	ECUV1C105ZF	1 16
C132	ECEA1AKS470	47 10
C133	RCUV1H680KC	68P 50
C134	RCUV1H681KB	680P 50
C135	ECUV1C104KB	0.1 16
C136	ECST1AY225L	2.2 10
C137	SRX01B470GNJ	47 6.3
C139	RCUV1E104ZF	0.1 25
C140	ECST0JB106L	10 6.3
C141	ECEA0JKS470I	47 6.3
C142	ECEA0JKS101I	100 6.3
C143	RCUV1H181K	180P 50
C144	RCUV1H272KB	2700P 50
C145	RCUV1H272KB	2700P 50
C201	ECUV1C224KR	0.22 16
C202	RCUV1E104ZF	0.1 25
C203	RCUV1H220KC	22P 50
C204	RCUV1H070DC	7P 50
C205	RCUV1E104ZF	0.1 25
C206	RCUV1H030CC	3P 50
C301	RCUV1H101KC	100P 50
C302	RCUV1H101KC	100P 50
C303	ECST1CY105L	1 16
C304	ECST0JB106L	10 6.3
C305	ECEA0JKS331	330 6.3
C306	ECST0GX106L	10 4
C307	ECUV1C224KR	0.22 16
C308	ECUV1C224KR	0.22 16
C321	ECEA1EPD4R7I	4.7 25
C322	ECEA1EPD4R7I	4.7 25
C329	ECEA0GPD221I	220 4
C330	ECEA0GPD221I	220 4
C333	RCUV1E104ZF	0.1 25
C334	RCUV1E104ZF	0.1 25
C335	RCUV1H681KB	680P 50
C336	RCUV1H681KB	680P 50
C337	RCUV1H471KB	470P 50
C338	RCUV1H471KB	470P 50
C340	ECEA0JKS101I	100 6.3
C341	ECST1AB475L	4.7 10
C343	RCUV1E104ZF	0.1 25
C344	ECEA0JKS331	330 6.3
C345	ECEA0JKS470I	47 6.3
C346	ECST0JB106L	10 6.3
C348	RCUV1H101KC	100P 50
C349	RCUV1H101KC	100P 50
C350	RCUV1H820J	82P 50
C351	RCUV1H820J	82P 50

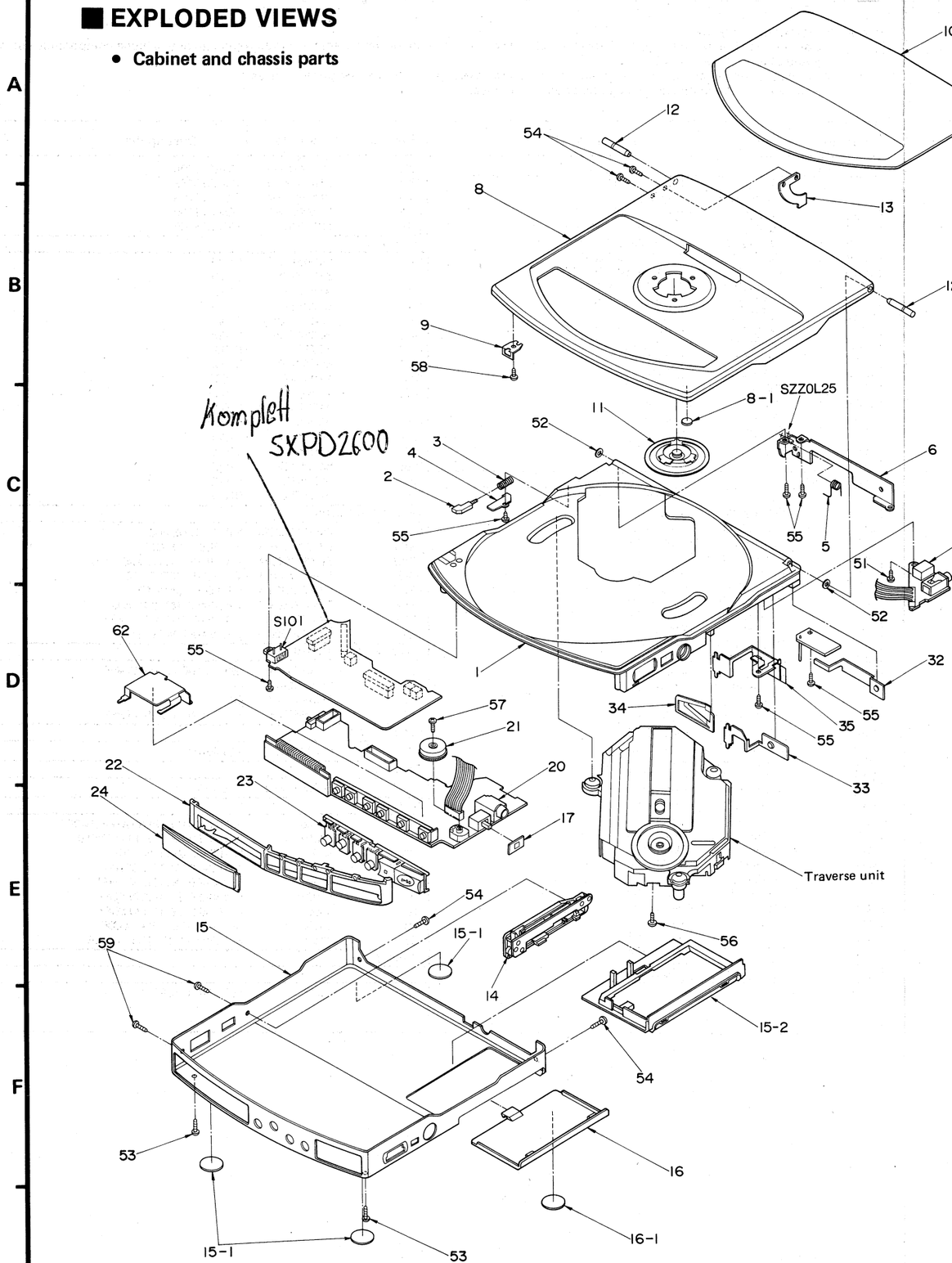
■ REPLACEMENT PARTS LIST (Electrical parts)

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

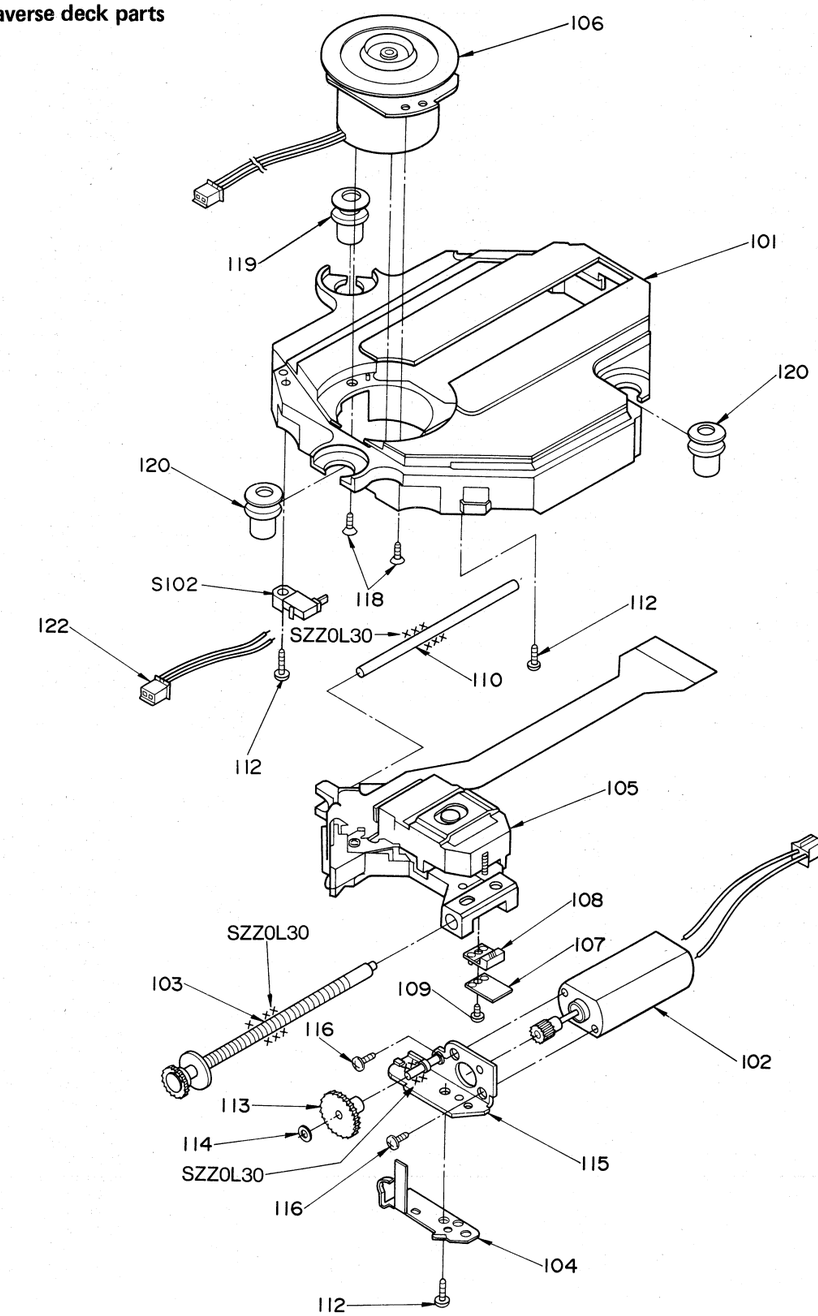
Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC11	FA7610N	I.C, REGULATOR
IC12	NJM2903MT1	I.C, RESET
IC101	AN8373S	I.C, SERVO AMP
IC102	AN8374S	I.C, SERVO PROCESSING
IC103	AN8385NS-A	I.C, TRAVERSE/SPINDLE
IC104	AN8385NS-A	I.C, FOCUS/TRACKING
IC105	NJM2406FTE1	I.C, AUTO POWER CONTROL
IC201	MN15845PEQ	I.C, SYSTEM CONTROL/LCD
IC202	MN6617	I.C, DIGITAL SIGNAL
IC203	LC3517BML15	I.C, 16K RAM
IC301	SM5807ES	I.C, DIGITAL FILTER
IC302	PCM60P-1	I.C, D-A CONVERTER
IC303	NJM2100MAT1	I.C, BUFFER AMP
IC304	NJM3414MT1	I.C, BUFFER AMP
IC305	MN6636S	I.C, DEGLITCH
IC306	H8DN2198	I.C, L.P.F
IC307	H8DN2198	I.C, L.P.F
ICP11	SRUF38	I.C,PROTECTOR
ICP12	SRUN15	I.C, PROTECTOR
(EK)		
TRANSISTORS		
Q11	2SD1328STTX	TRANSISTOR
Q12	2SD1328STTX	TRANSISTOR
Q14	DTC114EKT96	TRANSISTOR
Q16	DTA114EKT96	TRANSISTOR
Q17	DTA143TKT96	TRANSISTOR
Q18	DTA124EKT96	TRANSISTOR
Q19	2SB709QRSTX	TRANSISTOR
Q20	2SD1328STTX	TRANSISTOR
Q21	DTA124TKT96	TRANSISTOR
Q101	2SB970QRSTX	TRANSISTOR
Q102	2SB970QRSTX	TRANSISTOR
Q103	2SB970QRSTX	TRANSISTOR
Q104	2SB970QRSTX	TRANSISTOR
Q105	2SB970QRSTX	TRANSISTOR
Q106	2SB970QRSTX	TRANSISTOR
Q107	2SB970QRSTX	TRANSISTOR
Q108	2SB970QRSTX	TRANSISTOR
Q109	2SB970QRSTX	TRANSISTOR
Q110	DTA124TKT96	TRANSISTOR
Q201	DTC144EKT96	TRANSISTOR
Q202	DTA124TKT96	TRANSISTOR
Q203	DTA124EKT96	TRANSISTOR
Q204	2SB709QRSTX	TRANSISTOR
Q301	2SD1328RSTTX	TRANSISTOR
Q302	2SD1328RSTTX	TRANSISTOR
Q303	2SD1328RSTTX	TRANSISTOR
Q304	2SD1328RSTTX	TRANSISTOR
Q307	DTA114EKT96	TRANSISTOR
Q308	DTC114EKT96	TRANSISTOR
Q309	DTC144EKT96	TRANSISTOR
Q312	DTC114TKT96	TRANSISTOR
Q313	DTC114TKT96	TRANSISTOR
Q314	DTC114TKT96	TRANSISTOR
Q315	2SD1328RSTTX	TRANSISTOR
Q316	2SD1328RSTTX	TRANSISTOR
Q317	DTC114TKT96	TRANSISTOR
Q318	DTA114EKT96	TRANSISTOR
Q319	2SB970QRSTX	TRANSISTOR
Q320	FMW1T-98	TRANSISTOR
DIODES		
D11	MA151WKTX	DIODE
D12	MA151WKTX	DIODE
D13	MA151KTX	DIODE
D14	MA151ATX	DIODE
D101	RB435CT100	DIODE
D102	RB435CT100	DIODE
D103	RB435CT100	DIODE
D104	RB435CT100	DIODE
D105	MA151WATX	DIODE
D106	MA153TX	DIODE
D107	MA721TX	DIODE
D108	MA151KTX	DIODE
D201	MA151WKTX	DIODE
D202	MA151WKTX	DIODE
D203	MA151WKTX	DIODE
D205	MA151KTX	DIODE
D305	MA151KTX	DIODE
VARIABLE RESISTORS		
VR11	EVM6PSX00B23	V.R, VOLTAGE ADJ
VR101	EVM6PSX00B14	V.R, BEST EYE ADJ
VR102	EVM6PSX00B14	V.R, TRACKING BALANCE ADJ
VR103	EVM6PSX00B14	V.R, FOCUS OFFSET ADJ
VR104	EVM6PSX00B14	V.R, FOCUS GAIN ADJ
VR105	EVM6PSX00B14	V.R, TRACKING GAIN ADJ
VR106	EVM6PSX00B14	V.R, TRACKING OFFET ADJ
VR301	EVUBPAT50C54	V.R, HEADPHONES LEVEL
COILS AND TRANSFORMERS		
L11	SLZDW4303-P	SWITCHING TRANSFORMER
L13	SLQDQ3301-P	COIL
L101	SLQDN3001-P	COIL
L102	SLZDW4711-P	SWITCHING TRANSFORMER
OSCILLATORS		
X201	SVQ16CKSS	16.9344MHZ
DISPLAYS		
LCD201	EDD052C94A3P	DISPLAY
SWITCHES		
S101	SSHD6	PUSH SWITCH, OPEN,LASER ON/OFF
S201-1	SSGD7	KEYBOAED SWITCH, PLAY/PAUSE
S201-2	SSGD7	KEYBOAED SWITCH, STOP
S201-3	SSGD7	KEYBOAED SWITCH, SKIP(F)
S201-4	SSGD7	KEYBOAED SWITCH, SKIP(R)
S201-5	SSGD7	KEYBOAED SWITCH, REPEAT
S201-6	SSGD7	KEYBOAED SWITCH, MEMORY
S202	SSSD8	SLIDE SWITCH, PLAY MODE
S301	SSSD9	SLIDE SWITCH, HIGH FILTER
TRVERSE		
SWITCHES		
S102	SSHD5	PUSH SWITCH, REST

■ EXPLODED VIEWS

- Cabinet and chassis parts



- Traverse deck parts



Note: When changing mechanism parts, apply the specified grease to the areas marked " x x " as shown in the drawing.

■ REPLACEMENT PARTS LIST (Mechanical parts)

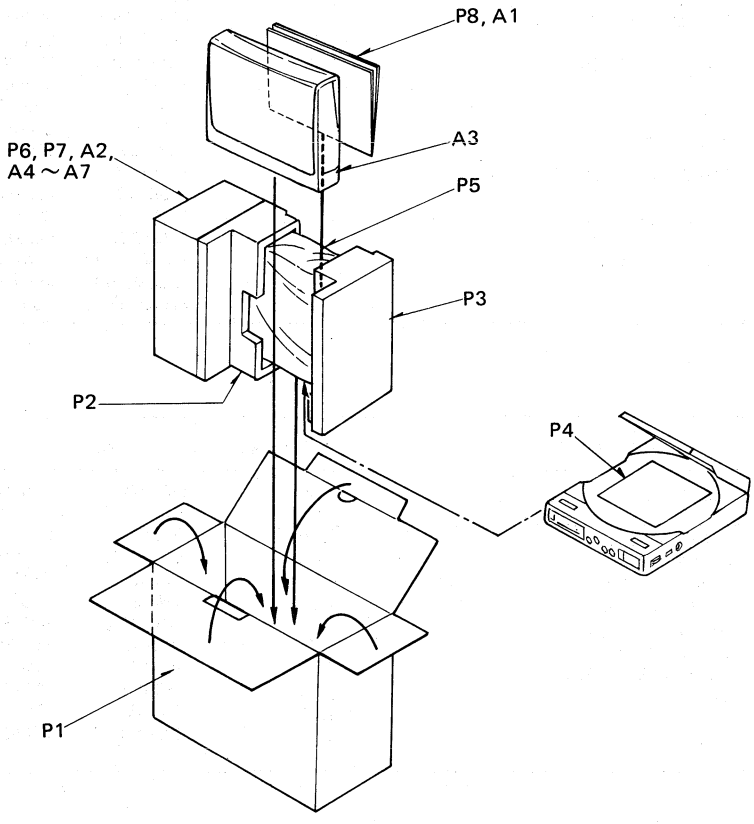
Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indication can be used for all areas.
* "Ⓢ" mark parts are used for silver type only.
* "Ⓚ" mark parts are used for black type only.
Parts other than "Ⓢ" and "Ⓚ" marked are used for both silver and black types.
* **Warning:** This product uses a laser diode. Refer to caution statements on page 3.
* **ACHTUNG:**
Die lasereinheit nicht zerlegen.
Die lasereinheit darf nut gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No.	Part No.	Description
CABINET AND CHASSIS		
1	SKMLXP6-M	CABINET ASS'Y
2	SHRD191	SLIDER
3	SUSD155	SPRING
4	SUWD132	HOLDER
5	SUSD154	SPRING
6	SUWD133	BRACKET
7	SUWD134	BRACKET
8 Ⓚ	SGDLXP6-KM	TOP COVER ASS'Y
8 Ⓢ	SGDLXP6-SM	TOP COVER ASS'Y
8-1	SHSD49	RUBBER CUSHION
9	SUWD136	BRACKET
10	SGULXP6-M	ORNAMENT
11	SD0D39A	CLAMPER
12	SUXD128	BRACING STRUT
13	SBLD3	HINGE
14	SHRLXP6-M	BUTTON ASS'Y
15 Ⓚ (EX, EW, XL) (EG, EB, EH) (EF, EI, XB) (NX)	SKULXP6-KE	BOTTOM COVER ASS'Y
15 Ⓚ (EK)	SKULXP6-KEK	BOTTOM COVER ASS'Y
15 Ⓚ (M)	SKULXP6-KM	BOTTOM COVER ASS'Y
15 Ⓚ (MC)	SKULXP6-KMC	BOTTOM COVER ASS'Y
15 Ⓚ (XA)	SUKLXP6-KXA	BOTTOM COVER ASS'Y
15 Ⓢ (EX, EW, XL) (EG, EB, EH) (EF, EI, XB) (NX)	SKULXP6-SE	BOTTOM COVER ASS'Y
15 Ⓢ (EK)	SKULXP6-SEK	BOTTOM COVER ASS'Y
15 Ⓢ (M)	SKULXP6-SM	BOTTOM COVER ASS'Y
15 Ⓢ (MC)	SKULXP6-SMC	BOTTOM COVER ASS'Y
15 Ⓢ (XA)	SKULXP6-SXA	BOTTOM COVER ASS'Y
15-1	SHGD100	RUBBER, FOOT
15-2 Ⓚ	SKELXP6-KM	BATTERY CASE ASS'Y
15-2 Ⓢ	SKELXP6-SM	BATTERY CASE ASS'Y
16 Ⓚ	SGELXP6-KM	BATTERY COVER ASS'Y
16 Ⓢ	SGELXP6-SM	BATTERY COVER ASS'Y
16-1	SHGD168	FOOT
17	SHSD47	SHEET
18	SJJD18	SOCKET
19	RJJD3S5ZA-C	SOCKET
20	RJJD5S3MZA-C	SOCKET
21	SBND90ZK0A	KNOB
22	SHRD188	HOLDER
23	SBCD5150MB0A	BUTTON
24	SGUD212	ORNAMENT
32	SJCD4	BATTERY TERMINAL
33	SJCD5	BATTERY TERMINAL
34	SJCD7	BATTERY TERMINAL
35	SJCLXP6-M	BATTERY TERMINAL ASS'Y
51	XTN17+5JFN	SCREW
52	SUDD85	WASHER
53 Ⓚ	XTN17+5JFZ	SCREW
53 Ⓢ	XTN17+5JFN	SCREW
54 Ⓚ	XQN14+A3FZ	SCREW
54 Ⓢ	XQN14+A3FN	SCREW
55	XTN17+4J	SCREW
56	XQN2+A3FYR	SCREW
57	XQN17+C3FZ	SCREW
58	XTN17+3JFN	SCREW
59 Ⓚ	XQN14+A5FZ	SCREW
59 Ⓢ	XQN14+A5FN	SCREW
62	SUWD145	SHIELD COVER
70	SJTD1828	CONNECTOR
71	SJSD1829	CONNECTOR
72	SJTD1428	CONNECTOR
73	SJSD1429	CONNECTOR
74	SJSD1626	CONNECTOR
75	EMCS0255B	CONNECTOR
76	EMCS0254B1B	CONNECTOR
77	EMCS0254B1R	CONNECTOR
78	SWKDXP6072	CONNECTOR

Ref. No.	Part No.	Description
TRVERSE		
TRAVERSE DECK		
101	SISD26-1	TRAVERSE BASE
102	SDGD66-E	DC MOTOR
102-1	SWKDXP6021	CONNECTOR(CN105)
103	SUXP126-E	DRIVE SHAFT ASS'Y
104	SUWD120-1	SPRING
105 ⚠	SOAD100A	OPTICAL PICKUP
106	SJGD10-A	SPINDLE MOTOR ASS'Y
107	SIRD110-1	PLATE
108	SUWD121	SPRING
109	XQN17+C3FZ	SCREW
110	SUXD27	SHAFT
112	XTN2+6JFZ	TAPPING SCREW
113	SDGD62	GEAR
114	SHWD35	WASHER
115	SIWD110-E	MOTOR BASE ASS'Y
116	XQN2+A2	SCREW
118	XQS2+A4FZ	SCREW
119	SHGD157	RUBBER SPACER
120	SHGD165	RUBBER SPACER
121	SWKDXP6022	CONNECTOR(CN104)

Ref. No.	Part No.	Description
PACKING MATERIAL		
P1 Ⓚ (M, EX, EK, XL) (EG, EB, EH) (EW, EI, XB) (XA, NX)	SPND339	PACKING CASE
P1 Ⓚ (MC)	SPND340	PACKING CASE
P1 Ⓚ (EF)	SPND341	PACKING CASE
P1 Ⓢ (M, EX, EK, XL) (EG, EB, EH) (EW, EI, XB) (XA, NX)	SPND336	PACKING CASE
P1 Ⓢ (MC)	SPND337	PACKING CASE
P1 Ⓢ (EF)	SPND338	PACKING CASE
P2	SPSD178	PAD
P3	SPSD179	PAD
P4	SPSD14	PROTECTION SHEET
P5	SPPD1	PROTECTION COVER
P6	SPSD183	ACCESSORIES CASE
P7 (M, MC)	SPSD184	PAD
P7 (EX, EK, EG) (EB, EH, EF) (EI, XL, XA) (XB, NX, EW)	SPSD185	PAD
P8	XZB09X21C03	PROTECTION BAG
ACCESSORIES		
A1 (M)	SQUD340	INSTRUCTION BOOK
A1 (EF, XL, XA) (XB, NX)	SQUD342	INSTRUCTION BOOK
A1 (EG)	SQUD343	INSTRUCTION BOOK
A1	SQUD344	INSTRUCTION BOOK
A1 (EI)	SQUD345	INSTRUCTION BOOK
A1 (EK)	SQULXP6-MC	INSTRUCTION BOOK
A1 (MC)	SQULXP6-SE	INSTRUCTION BOOK
A1 (EX, EH, EB) (EW)	SH-CDA6U-E	AC ADAPTOR
A2 (EX, EW)	SH-CDA6U-EK	AC ADAPTOR
A2 (EK)	SH-CDA6U-E5	AC ADAPTOR
A2 (EG, EB, EH) (EF, EI)	SH-CDA6U-M	AC ADAPTOR
A2 (M)	SH-CDA6U-MC	AC ADAPTOR
A2 (MC)	SH-CDA6U-X	AC ADAPTOR
A2 (XA, XB, NX)	SH-CDA6U-XL	AC ADAPTOR
A2 (XL)	SPDD16	SOFT CASE
A3 (M, MC)	SPDD20	SOFT CASE
A3 (EX, EK, XL) (EG, EH, EB) (EF, EI, XB) (XA, NX, EW)	SPBD139Z	STEREO EARPHONES
A4	SPBD140Z	WIRED REMOTE CONTROL
A5	SH-CDB8	RECHARGEABLE BATTERY
A6 (MC, EX, EK) (XL, EG, EH) (EB, EF, EI) (XB, XA, EW) (NX)	SH-CDB8-BP2	RECHARGEABLE BATTERY
A6 (M)	SJPD5-2	OUTPUT CORD
A7	RJP120ZBS-H	AC PLUG ADAPTOR
A10 ⚠ (XA, XB, NX)		

■ PACKING



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ORDER NO. AD8905147S0
A6

Service Manual

Compact Disc Player

SL-XP6

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

Color

(K)...Black Type
(S)...Silver Type

Area

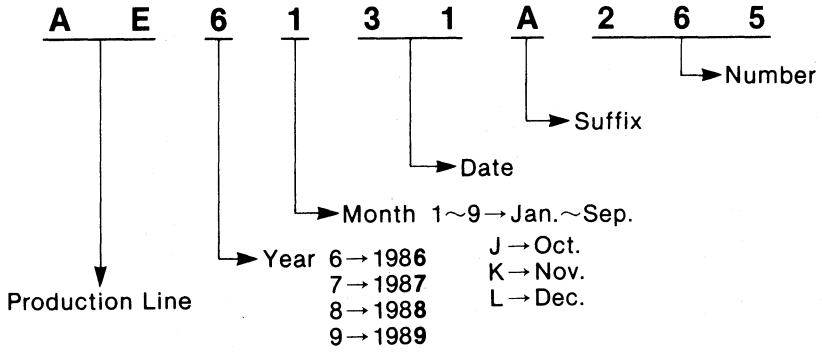
Color	Area
(K) (S)	(M).....U.S.A.
(K) (S)	(MC).....Canada.
(K) (S)	(EX).....Continental Europe.
(K) (S)	(EK).....United Kingdom.
(K) (S)	(XL).....Australia.
(K) (S)	(EG).....F.R. Germany.
(K) (S)	(EB).....Belgium.
(K) (S)	(EH).....Holland.
(K) (S)	(EF).....France.
(K) (S)	(Ei).....Italy.
(K) (S)	(EW).....Switzerland.
(K) (S)	(XA).....Asia, Latin America, Middle Near East, Africa and Oceania.

Please file and use this supplement manual together with the service manual for Model No. SL-XP6, Order No. AD8809247C1 (M)(MC), or AD8810280C8 (for other areas).

Note:

- This supplement has been issued to inform you that the servo and main P.C.B. have been changed in units having serial number suffixes "D" or later. (Refer to "How to read the serial number" shown below).

● How to read the serial number



■ REPLACEMENT PARTS LIST

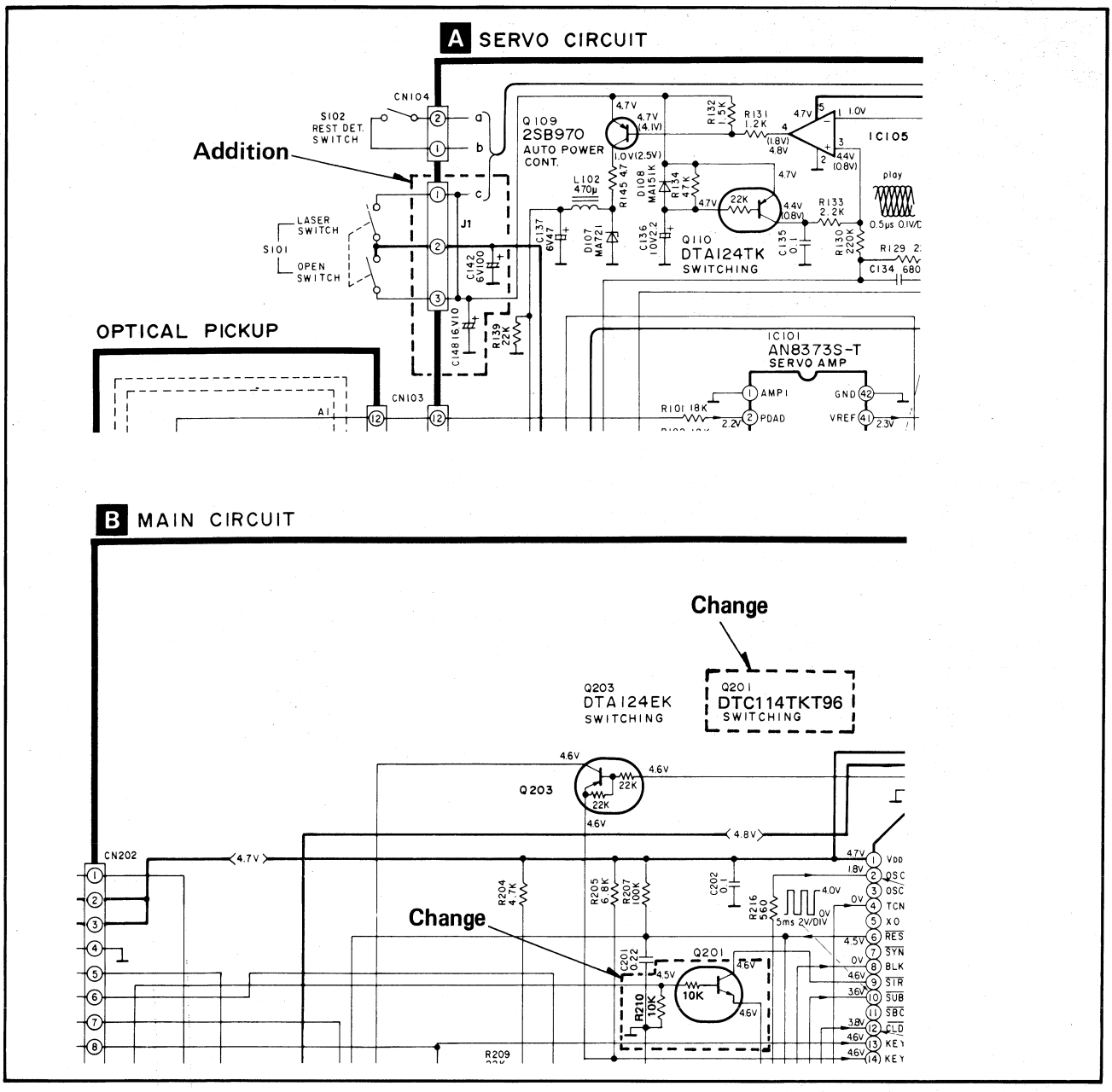
Ref. No.	Change of Part No. ORIGINAL	→ NEW	Description	Remarks
TRANSISTOR				
Q201	DTC144EKT96	**DTC114TKT96**	Transistor	Change
RESISTOR				
R210	ERJ6GEYJ104V	**ERJ6GEYJ103V**	Resistor, 10KΩ	Change
J1	——	**ERDS2T0**	Jumper	Addition
CAPACITOR				
C148	——	**ECEA1CKS100**	Capacitor, 16V/10μF	Addition

Note: J1 may be shorted with a jumper.

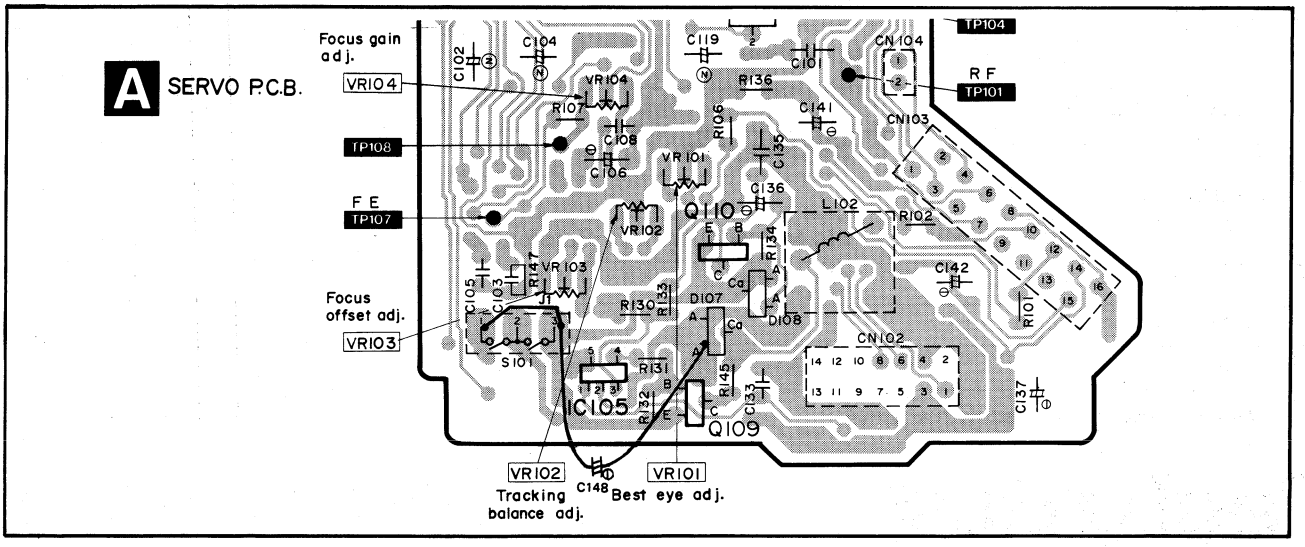
Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

■ SCHEMATIC DIAGRAM



■ PRINTED CIRCUIT BOARD



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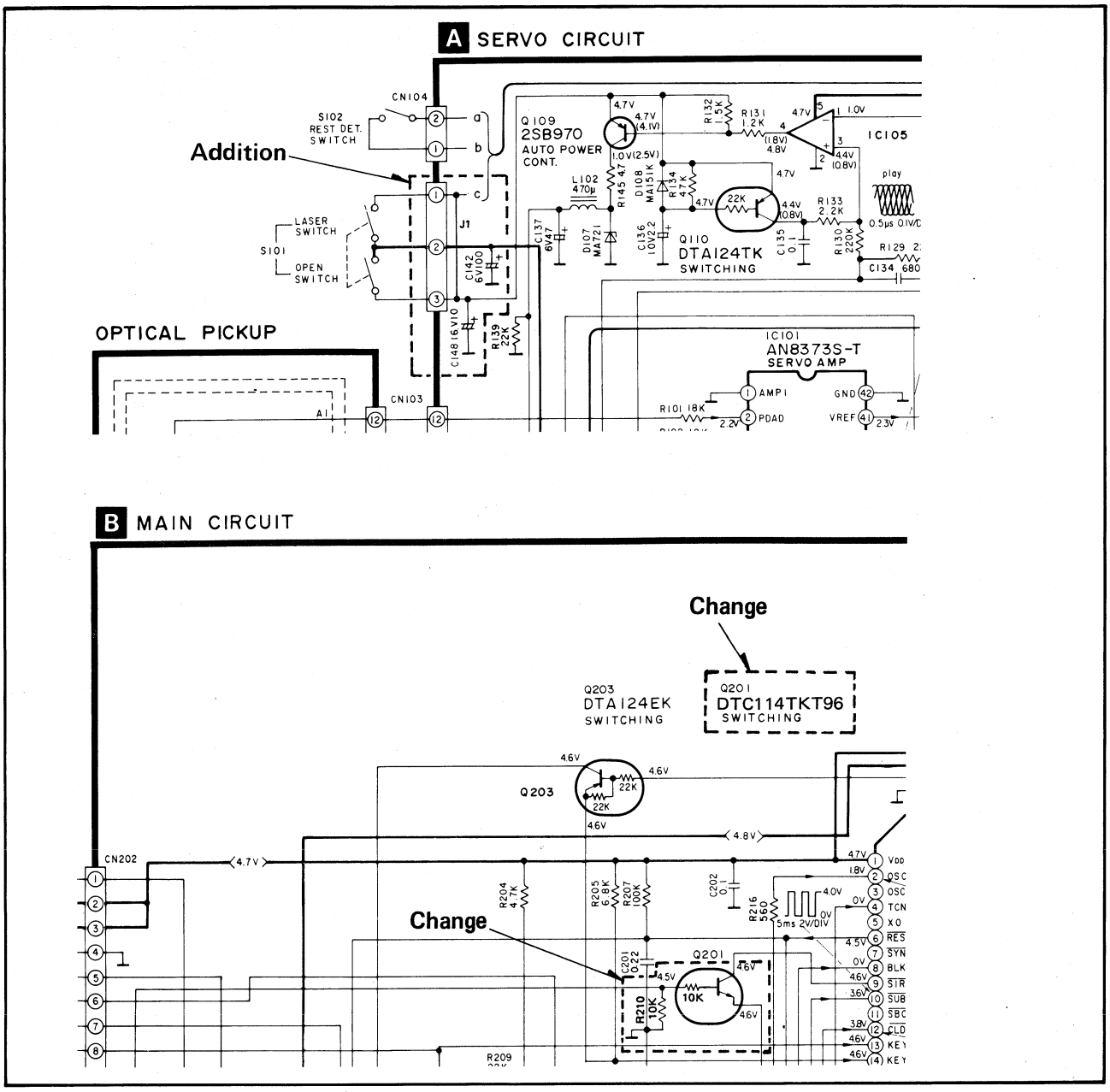
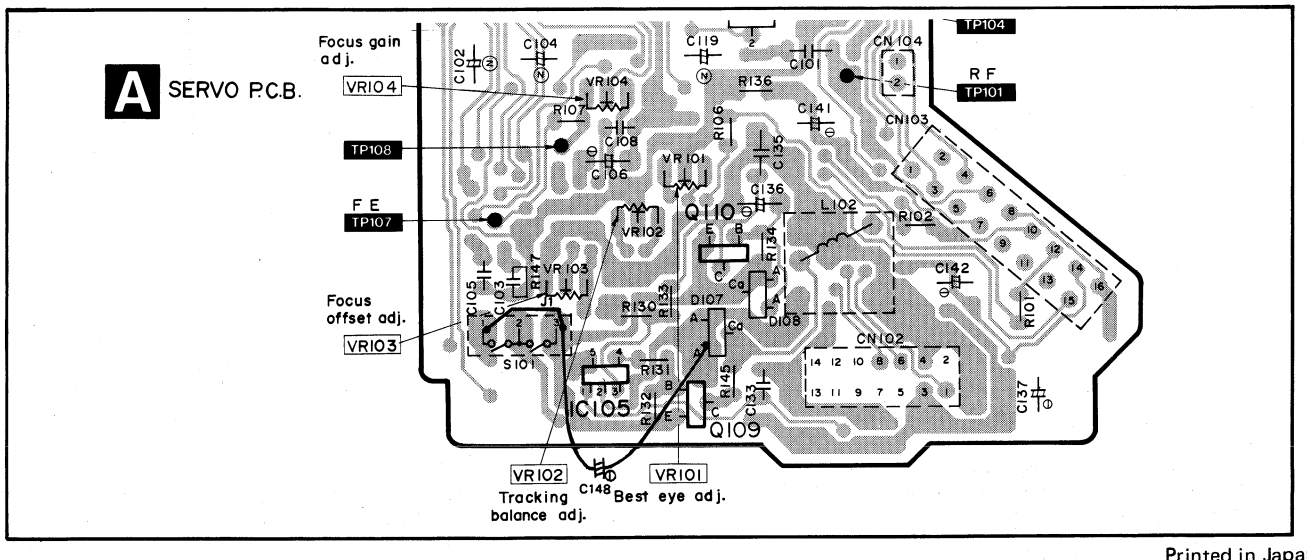
K890511800YY

■ SCHEMATIC DIAGRAM



■ PRINTED CIRCUIT BOARD



Printed in Japan
K890511800YY

ORDER NO. AD8905147S0
A6

Service Manual

Compact Disc Player

SL-XP6

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

Color

(K)...Black Type
(S)...Silver Type

Area

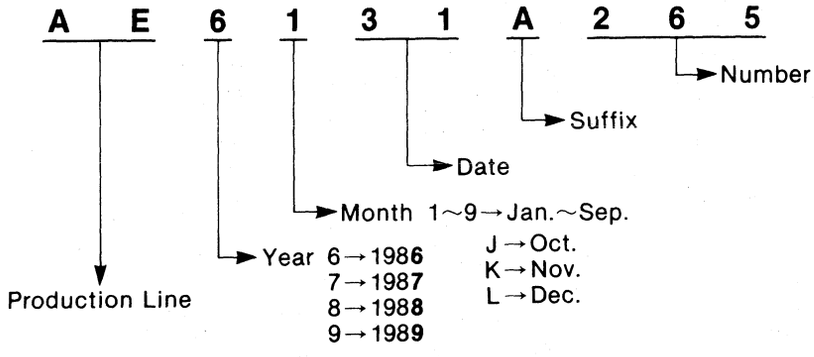
Color	Area
(K) (S)	(M).....U.S.A.
(K) (S)	(MC).....Canada.
(K) (S)	(EX).....Continental Europe.
(K) (S)	(EK).....United Kingdom.
(K) (S)	(XL).....Australia.
(K) (S)	(EG).....F.R. Germany.
(K) (S)	(EB).....Belgium.
(K) (S)	(EH).....Holland.
(K) (S)	(EF).....France.
(K) (S)	(Ei).....Italy.
(K) (S)	(EW).....Switzerland.
(K) (S)	(XA).....Asia, Latin America, Middle Near East, Africa and Oceania.

Please file and use this supplement manual together with the service manual for Model No. SL-XP6, Order No. AD8809247C1 (M)(MC), or AD8810280C8 (for other areas).

Note:

- This supplement has been issued to inform you that the servo and main P.C.B. have been changed in units having serial number suffixes "D" or later. (Refer to "How to read the serial number" shown below).

● How to read the serial number



■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No. ORIGINAL → NEW		Description	Remarks
TRANSISTOR				
Q201	DTC144EKT96	**DTC114TKT96**	Transistor	Change
RESISTOR				
R210	ERJ6GEYJ104V	**ERJ6GEYJ103V**	Resistor, 10KΩ	Change
J1	——	**ERDS2T0**	Jumper	Addition
CAPACITOR				
C148	——	**ECEA1CKS100**	Capacitor, 16V/10μF	Addition

Note: J1 may be shorted with a jumper.

Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

ORDER NO. AD8903062T0
A6

Technical Information

INTRODUCTION OF NEW TEST FIXTURES

MODELS: SL-XP6, SL-NP11

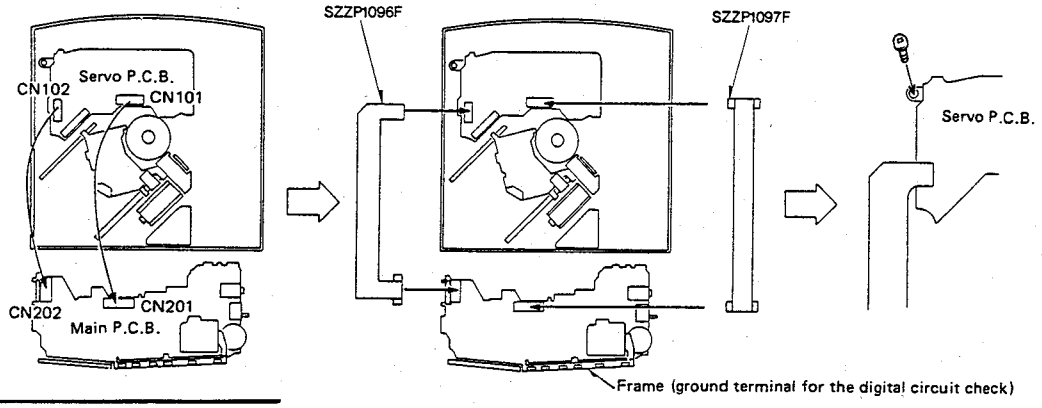
We extend our sincere thanks for your continued efforts in the sales and servicing of our products. We would like to inform you that we have developed two **FPC EXTENSION CABLES** necessary for troubleshooting and alignments of the above models.

Part Number	No. of conductors	Connect from	Connect to
SZZP1096F	14	CN102	CN202
SZZP1097F	18	CN101	CN201

CONNECTION PROCEDURE:

To connect the above cables, follow the procedure described below, in conjunction with the Service Manual.

1. Remove the bottom cabinet and PCB's in accordance with procedures 1 and 2 under "DISASSEMBLY INSTRUCTIONS".
2. Separate the Servo PCB from the Main PCB in accordance with procedure 4 under "DISASSEMBLY INSTRUCTIONS".
3. Connect **SZZP1096F** from CN102 (Servo PCB) to CN202 (Main PCB).
   Connect **SZZP1097F** from CN101 (Servo PCB) to CN201 (Main PCB).
4. Refer to the Service Manual for additional instructions.



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Printed in Japan
K890513000KM

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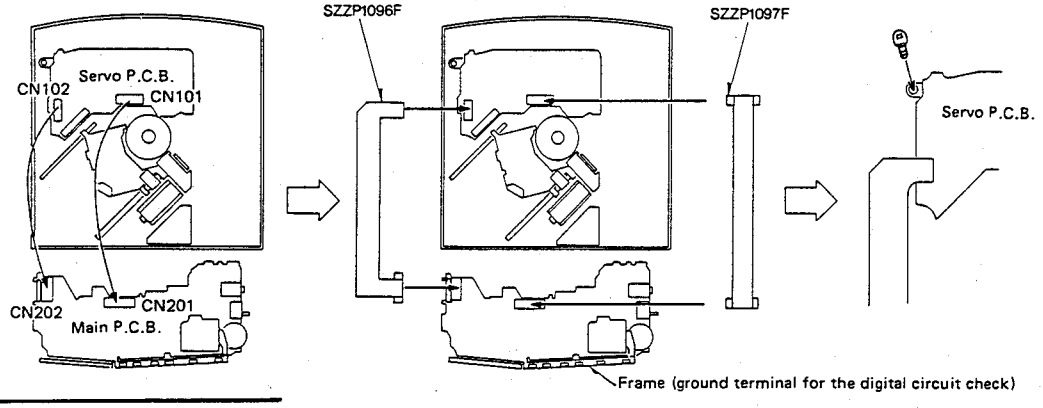

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